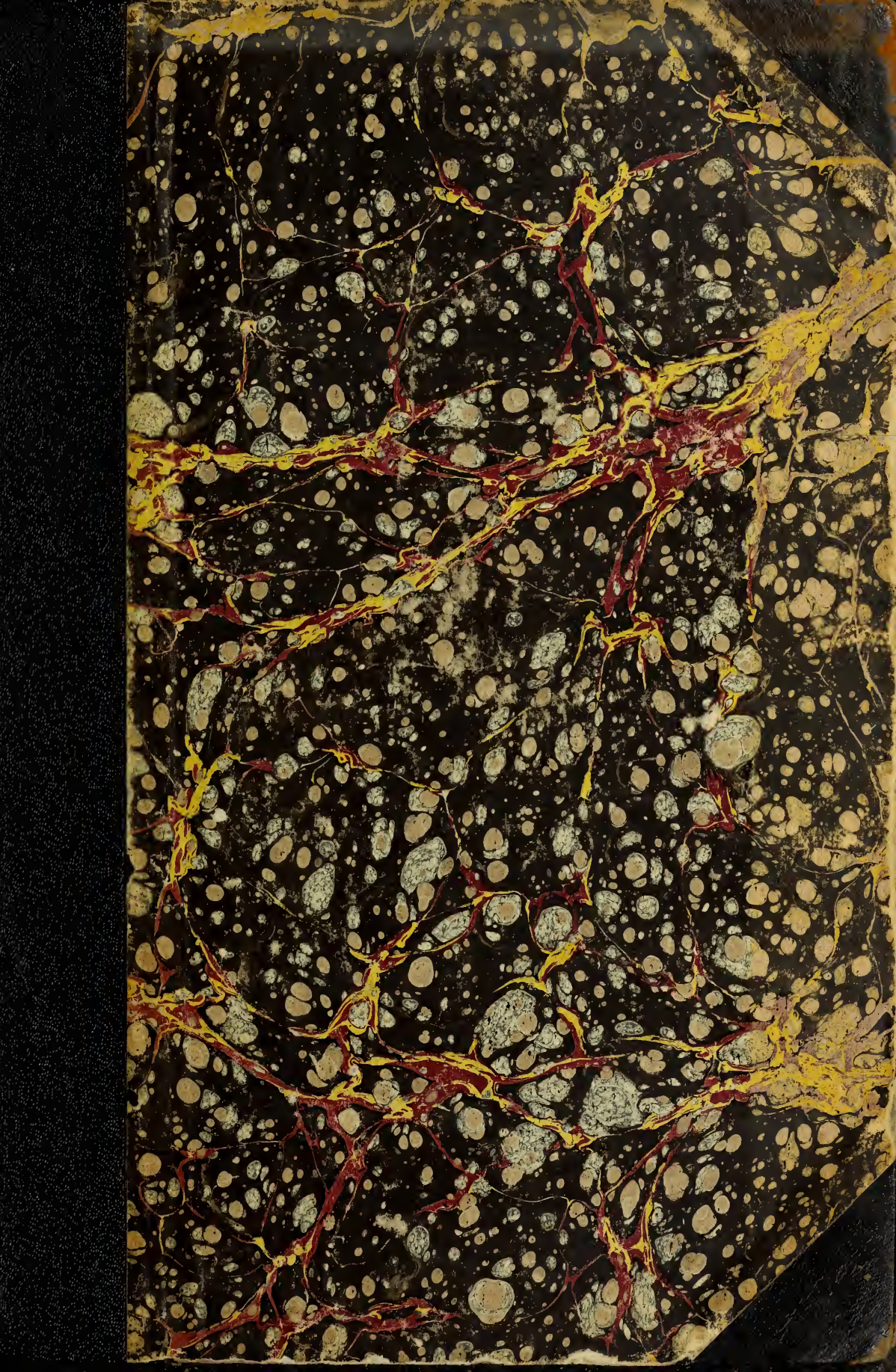

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REPORT

OF THE

FOURTH ANNUAL

State Viticultural Convention,

HELD AT IRVING HALL, SAN FRANCISCO,

MARCH 15, 16, 17, 18, 19 AND 20, 1886.

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R. T. PIERCE, - - Santa Clara
DR. GEO. BERNARD, - - Livermore
I. LANDSBERGER, - - San Francisco
W. PALMTAG, - - - Hollister
W. B. WEST, - - - - Stockton
E. H. RIXFORD, - Woodside, San Mateo Co.
E. B. SMITH, - - - Martinez
WM. CALDWELL, - - Cloverdale
CAPT. J. CHAMON DE ST. HUBERT, - - - - San Francisco

Committee on Raisin Exhibits.

BYRON JACKSON, - - Woodland
W. W. SMITH, - - - Vacaville
DR. BLATCHLY, - - - Fresno
W. B. WEST, - - - Stockton
T. C. WHITE, - - - Fresno

NO.	VARIETY.	Vintage.	GRAPES FURNISHED BY	PLACE OF PRODUCTION.	Laboratory number.
31	Early Black July Fermented with a small amount of yeast	1885	W. B. West	Stockton	7
32	Early Black July No yeast used	1885	do	do	8
33	Early Black July Grapes stemmed but not crushed	1885	W. B. West	do	9
34	Early Black July Fermented with plaster of Paris, added at the rate of five pounds to the ton	1885	do	do	10
35	Gros Bouschet	1885	George H. Perry	Livermore	19a
36	Tannat	1885	C. A. Wetmore	do	26
37	Cinsaut	1885	George H. Perry	do	33
38	Aramon	1885	do	do	34
39	2nd crop Zinfandel	1885	J. G Heald	Cloverdale	36
40	Mission	1885	George West	Stockton	42
41	Mondeuse	1885	do	do	49
42	Boal	1885	do	do	52
41	*Sauvignon Vert	1883	H. W. Crabb	Oakville	
44	*Moselle Riesling	1884	do	do	
45	*Verdelho	1885	T. D. Cone	Folsom	
46	*Grenache	1885	H. B. Wagoner	Livermore	
47	*Golden Chasselas	1885	F. L. Fowler	do	
48	*Golden Chasselas	1885	H. W. Crabb	Oakville	
49	Folle Blanche, ⅔ Colombar, ⅓ Fermented off skins. Distilled and doubled	1884	J. P. Smith	Livermore	
50	Same as No. 49, but fermented on skins	1884	do	do	
51	White Mission, Distillate	1885	I. De Turk	Santa Rosa	
52	Distillate, White Mission, with 15 per cent Burger	1885	I. De Turk and H. W. Crabb	Santa Rosa Oakville	
53	Red Mission, Distillate	1885	I. De Turk	Santa Rosa	
54	Distillate, Red Mission, with 15 per cent Burger	1885	I. De Turk and H. W. Crabb	Santa Rosa Oakville	
55	Burger, Distillate	1885	H. W. Crabb	Oakville	
56	Early Black July, Distillate	1885	W. B. West	Stockton	

TANNIC WINES.

From the Experimental Cellar of the State Viticultural Commission.

NO.	VARIETY.	
57	Cabernet Franc and Verdot	Alcohol on Pomace, 40 days
58	Petite Syrah	do do 30 do
59	Mataro	do do 25 do
60	Dried Vitis Californica, sweet	do do 40 do
61	Zinfandel	do do 70 do
62	Dried Black Burgundy Skins, sweet	do do 70 do
63	Crabb's Black Burgundy	do do 25 do
64	Lenoir	do do 16 do
65	Second Crop Mataro	do do 40 do
66	Cabernet Franc and Cabernet Sauignon	do do 70 do
67	Tannat	do do 30 do
68	Petit Bouschet	do do 30 do

Samples Treated in Hot Room of Experimental Cellar of the State Viticultural Commission.

NO.	VARIETY.	Vintage.	WINES FURNISHED BY	PLACE OF PRODUCTION.
A	Golden Chasselas	1885	H. W Crabb	Oakville
B	Golden Chasselas, plastered	1885	do	do
C	Golden Chasselas, plastered	1885	F. L. Fowler	Livermore
D	Verdelho	1885	T. D. Cone	Folsom
E	Sauvignon Vert	1883	H. W. Crabb	Oakville
F	Semillon	1885	do	do
G	Trousseau Port	1884	C. A. Wetmore	Livermore
H	Trousseau, Dry	1884	do	do
I	Pinot	1884	do	do
J	Sherry	1882	do	do
K	Trousseau, Madeira	1884	do	do
L	White Grenache	1885	H. B. Wagoner	do

N. B.—All the above wines have been in the hot room for 70 days.

Exhibits From Wine Makers and Merchants.

NO.	VARIETY.	Vintage.	WINES FURNISHED BY	PLACE OF PRODUCTION OR CELLAR.
69	Malbec	1885	J. A. Stanly	Napa
70	Lenoir	1885	do	do
71	Zinfandel	1885	do	do
72	Carignan	1885	do	do
73	Mataro	1885	do	do
74	Brandy	1880	Napa Valley Wine Company	St. Helena
75	Brandy	1881	do	do
76	Mataro	1885	do	do
77	Grosser Blauer	1885	do	do
78	Teinturier	1885	do	do
79	Zinfandel	1885	do	do
80	Burgundy	1885	do	do
81	Verdal	1884	do	do
82	Riesling	1885	do	do
83	Riesling	1881	do	do
84	Gutedel	1882	do	do
85	Gutedel	1885	do	do
86	Franken Riesling, Chauche Gris, Burgundy, Feher Szagos	1885	Lay, Clark & Co.	Santa Rosa
87	Traminer	1885	do	do
88	Franken Riesling, Chauche Gris	1885	do	do
89	Franken Riesling	1885	do	do
90	Burger	1885	do	do
91	Golden Chasselas, Malaga, Feher Szagos, Blaue Elbling	1885	do	do
	Golden Chasselas	1885	do	do
92	Gutedel	1885	do	do
93	Zinfandel	1885	do	do
94	Zinfandel Malvasia	1885	do	do
95	Malvasia			
96	Zinfandel	1884	do	do
97	Zinfandel	1883	do	do

NO.	VARIETY.	Vintage...	VINE GROWER.	PLACE OF PRODUCTION OR CELLAR.
98	Petit Pinot, from young vines	1885	Los Gatos & Saratoga Wine & Fruit Co.	Los Gatos
99	Zinfandel, 50 per cent Mataro, 25 per cent Grenache, 15 per cent Colombar, 10 per cent	1885	do	do
100	Zinfandel, 1 Charbono, 5	1885	do	do
101	Golden Chasselas	1885	do	do
102	Colombar	1885	do	do
103	Cabernet	1885	L. D. Combe	San Jose
104	Mataro	1885	J. P. Bubb	Cupertino
105	Cabernet	1885	Cupertino Viticultural Society	do
106	Trousseau	1885	do	do
107	Orleans Riesling	1885	do	do
108	Charbono	1885	do	do
109	Zinfandel	1885	do	do
110	Zinfandel	1885	Juan Gallegos	Mission San Jose
111	Zinfandel, A	1885	Rueff & Rehfuess	San Francisco
112	Zinfandel, B	1885	do	do
113	Ploussard	1885	J. B. J. Portal	San Jose
114	Mataro Grenache Carignan	1885	do	do
115	Zinfandel	1885	do	do
116	Cabernet Franc	1885	do	do
117	Cabernet Franc	1884	do	do
118	Cabernet Franc, 80 Cabernet Sauvignon 20	1884	do	do
119	Cabernet Franc, 90 Cabernet Franc, 10	1884	do	do
120	Zinfandel	1884	do	do
121	Grenache Carignan	1884	do	do
122	Carignan	1883	do	do
123	Grenache	1883	do	do
124	Burgundy	1882	do	do
125	Golden Chasselas	1881	Gustav Niebaum	Inglenook Cellar
126	Semillon	1885	do	Rutherford
127	Cabernet Sauvignon	1885	do	do
128	Verdot	1885	do	do
129	Grenache	1884	Jas. T. Pierce	Santa Clara
130	Mataro	1885	do	do
131	Mataro	1884	do	do
132	Zinfandel	1885	do	do
133	Charbono	1885	do	do
134	Zinfandel, 3 Malbec, 1	1885	do	do
135	Zinfandel, 3 Charbono, 1	1885	do	do
136	Grenache Mataro Zinfandel	1885	do	do
137	Cabernet Sauvignon	1885	J. H. Drummond	Glen Ellen
138	Semillon	1885	do	do
139	Petite Syrah	1885	do	do
140	Tannat	1885	do	do
141	Gros Mancin	1885	do	do
142	St. Macaire	1885	do	do
143	Zinfandel, 85 Folle Noire, 15	1885	E. Paris	Livermore
144	Zinfandel, 80 Petit Pinot, 20	1885	do	do
145	Folle Blanche	1885	do	do

NO.	VARIETY.	Vintage.	VINE GROWER.	PLACE OF PRODUCTION OR CELLAR.
146	Golden Chasselas	1885	E. Paris	Livermore
147	Zinfandel	1885	Wallace Everson	do
148	Zinfandel	1885	S. Osterhout	do
149	Colombar, dry	1885	J. P. Smith	Olivina Vineyard
150	Colombar, sweet	1885	do	Livermore
151	Meunier	1885	do	do
152	Mataro Grenache Carignan	1885	do	do
153	White Grenache	1885	do	do
154	Zinfandel Mataro	1885	do	do
155	Zinfandel Charbono Trousseau	1885	Ph. Tournier	Mountain View
156	Zinfandel Charbono	1884	do	do
157	Brandy	1880	I. De Turk	Santa Rosa
158	Brandy	1882	do	do
159	Brandy	1884	do	do
160	Brandy	1885	do	do
161	Riesling	1883	do	do
162	Riesling	1884	do	do
163	Riesling	1885	do	do
164	Zinfandel	1884	do	do
165	Zinfandel	1885	do	do
166	White Mission	1884	do	do
167	Sherry		do	do
168	White Zinfandel	1884	J. B. Whitcomb	Colfax
169	Blend	1885	do	do
170	Zinfandel, No. 9	1885	M. M. Estee	Hedgeside, Napa
171	Zinfandel, No. 14	1885	do	do
172	Zinfandel, No. 15	1885	do	do
173	Chasselas de Foy	1885	do	do
174	Golden Chasselas	1885	do	do
175	Burger	1885	do	do
176	Zinfandel	1885	J. F. Black	Livermore
177	Trousseau, ¾ Burger, ¼	1885	do	do
178	Zinfandel, ½ Grenache, ½	1885	H. B. Wagoner	Livermore
179	Petit Pinot	1885	James Lyons	Livermore
180	Zinfandel, 2nd crop	1885	P. C. Waltenbaugh	do
181	Folle Blanche	1885	do	do
182	Meunier, 4-5 Burger, 1-5	1885	Winter & Sons	Cloverdale
183	Zinfandel, ⅔ Meunier, ⅓	1885	do	do
184	Zinfandel	1885	do	do
185	Petit Bouschet	1885	E. B. Smith	Martinez
186	Zinfandel	1885	do	do
187	Franken Riesling	1885	do	do
188	Golden Chasselas	1885	do	do
189	Brandy	1884	H. Mette	Red Banks
190	Brandy	1885	do	do
191	Zinfandel	1884	do	do
192	Muscat	1884	do	do
193	White Zinfandel	1884	do	do
194	White Mission	1884	do	do
195	Meunier	1884	Charles Krug	St. Helena
196	Teinturier	1885	do	do
197	Malbec	1885	do	do
198	Burgundy, ⅓ Charbono, ⅓ Zinfandel, ⅓	1885	Charles Knust	Cloverdale

NO.	VARIETY.	Vintage.	VINE GROWER.	PLACE OF PRODUCTION OR CELLAR.
199	Zinfandel	1885	Chas. Knust	Cloverdale
200	Zinfandel, 2nd crop	1885	do	do
201	Zinfandel, ½ Burgundy, ¼ Charbono, ¼	1885	J. G. Heald	Cloverdale
202	Red Mission	1885	L. Larrison	Cloverdale
203	Mataro	1885	do	do
204	Zinfandel	1884	G. Haehl	do
205	Riesling	1885	do	do
206	Malvasia Port	1884	do	do
207	Golden Chasselas, ⅓ Feher Szagos, ⅔	1884	do	do

State University Fermentations.

NO.	VARIETY.	Vintage.	VINE GROWER.	PLACE OF PRODUCTION OR CELLAR.
208	Merlot	1885	H. Mel	Glenwood
209	Charbono	1885	do	do
210	Charbono	1885	D. C. Feeley	Patchin
211	Balouzat	1885	do	do
212	Teinturier	1885	do	do
213	Verdal	1885	do	do
214	Riesling	1885	do	do
215	Burger	1885	do	do
216	Burger	1885	Leland Stanford	Vina
217	Burger	1885	C. Weller	Harrisburg
218	Burger	1885	M. Keatinge	Lower Lake
219	Golden Chasselas, ⅓ Burger, ⅔	1885	do	do
220	Chauche Gris	1885	W. G. Klee and H. Von der Leith	Happy Valley, Santa Cruz Co.
221	White Zinfandel, 2nd crop, from must condensed by the Yaryan Process	1885	Bugby Vineyard	Folsom
222	White Zinfandel, Similar to above but must filtered before fermenting	1885	do	do
223	Zinfandel	1885	H. Keatinge	Lower Lake
224	Zinfandel, Must left one week longer on pomace than No. 223	1885	do	do
225	Petite Syrah	1884	Natoma Company	Folsom
226	Mondeuse	1884	do	do
227	Tinta Amarella, Port	1884	do	do
228	Tinta Amarella, dry	1884	do	do
229	Tinta Cao Moreto Mourisco Preto Petit Bouschet, Port	1884	do	do
230	Tinta Cao Mourisco Preto, Port	1884	do	do
231	Merlot	1884	do	do
232	White Prolific	1881	George West	Stockton
233	White Prolific, fermented on skins	1881	do	do
234	Black Prince	1881	do	do
235	Grenache 3 year old vines	1883	J. P. Smith	Livermore
236	Mataro 3 year old vines	1883	do	do
237	Palomino	1884	Natoma Company	Natoma
238	Peruno	1884	do	do

NO.	VARIETY.	Vintage.	VINE GROWER.	PLACE OF PRODUCTION OR CELLAR.
239	Pecoui Touar	1884	Natoma Company	Natoma
239 A	Beba	1884	do	do
240	Clairette Blanche	1884	do	do
241	Roussanne	1884	do	do
242	Verdelho	1884	do	do
243	Folle Blanche	1884	do	do
244	Muscadelle du Bordelais, compact variety	1884	do	do
245	Muscadelle du Bordelais, loose variety	1884	do	do
246	Semillon, 50 per cent Sauvignon, 25 per cent Muscadelle du Bordelais, 25 per cent	1884	do	do
247	Aramon	1884	do	do
248	Beclan	1884	do	do
249	Petit Bouschet	1884	do	do
250	Colombar	1885	J. Gallegos	Mission San Jose
251	Cabernet Franc	1885	L. D. Combe	San Jose
252	Cabernet Franc	1885	W. Pfeffer	Gubserville
253	Cabernet Franc, and 15 per cent Malbec, Pfeffer's own fermentation	1885	do	do

Further Exhibits from Wine Makers and Merchants.

[N. B.—Part of the most important viticultural experimental work during 1885 was performed under charge of H. W. Crabb, at Oakville, Napa County; the following samples from his cellar include a number of the results obtained, and should be classed as from Crabb's Viticultural Station.]

NO.	VARIETY.	Vintage.	VINE GROWER.	PLACE OF PRODUCTION OR CELLAR.
254	Gross Blauer	1885	H. W. Crabb	Oakville
255	Tannat	1884	do	do
256	Cabernet Sauvignon	1884	do	do
257	Cabernet Sauvignon	1885	do	do
258	Blue Portuguese	1885	do	do
259	Tinta Amarella	1885	do	do
260	Spanna	1885	do	do
261	Refosco	1885	do	do
262	Beclan	1885	do	do
263	Tinto Valdepenas	1885	do	do
264	Petite Syrah	1884	do	do
265	Black Farmot	1884	do	do
266	Black Burgundy	1883	do	do
267	Black Burgundy	1885	do	do
268	Zinfandel and Burgundy	1884	do	do
269	Zinfandel	1885	do	do
270	Lagrein	1885	do	do
271	Gross Blauer Lenoir extract	1885	do	do
272	Burgundy, dry extract	1885	do	do
273	Port, Burgundy	1885	do	do
274	Port, Gross Blauer	1885	do	do
275	Port, Burgundy Trousseau	1885	do	do
276	Port, Pied de Perdrix	1885	do	do
277	Burgundy, sweet extract	1885	do	do
278	Sweet Catawba	1885	do	do
279	Sweet Sauterne	1885	do	do

NO.	VARIETY.	Vintage...	VINE GROWER.	PLACE OF PRODUCTION OR CELLAR.
280	Semillon Blanc	1883	H. W. Crabb	Oakville
281	Sauvignon Vert and Musque	1883	do	do
282	Sauvignon Vert	1885	do	do
283	Dry Sauterne	1884	do	do
284	Riesling	1882	do	do
285	Verdelho	1885	do	do
286	Pinot Chardonay	1885	do	do
287	Riesling Gentil Aromatique	1885	do	do
288	Burger, 24 per cent saccharine	1885	do	do
289	Sweet Muscatel	1882	do	do
290	Muscadine	1885	do	do
291	Brandy	1882	do	do
292	Brandy	1884	do	do
293	Zinfandel Brandy	1884	do	do
294	Burger Brandy	1884	do	do
295	Verdal Brandy	1884	do	do
296	Riesling Brandy	1884	do	do
297	Zinfandel Red, plastered	1885	do	do
298	Zinfandel Red, not plastered	1885	do	do
299	Pinot Valraine, White	1884	do	do
300	Sauvignon Blanc	1885	do	do
301	Sherry	1882	do	do
302	Moslavina	1883	do	do
303	Mataro, from grafts	1885	B. H. Twombly	Santa Ana
304	Mataro, from grafts Carignan, from grafts	1885	do	do
305	Bundola, Red, from grafts of a Swiss variety	1885	Cordelia Wine Co.	Cordelia
306	Of Mission Must	1885	Cond'nsed Musts fermented by Lenk W. Co., Toledo, Ohio	Folsom
307	Of Chasselas Must	1885	do	do
308	Of Muscat Must	1885	do	do
309	Of Catawba Must	1885	do	Ohio
310	Zinfandel Must, unfermented	1885	do	Folsom
311	Zinfandel, ⅔ Petit Pinot, ⅓	1885	F. L. Fowler	Livermore
312	Pinot Franc and Pinot Pernand	1884	J. H. Drummond	Glen Ellen
313	Trousseau	1884	G. Eggers	Fresno
314	Burger	1884	Stern & Rose	San Gabriel
315	Blue Elbling	1884	do	do
316	Gros Mancin and Zinfandel	1884	J. H. Drummond	Glen Ellen
317	Alicante Bouschet	1884	C. A. Wetmore	Livermore
318	Malbec	1882	Chas. Lefranc	San Jose
319	Zinfandel	1884	C. A. Wetmore	Cresta-Blanca Vineyard, Livermore
320	Trousseau	1884	do	do
321	Trousseau Blended	1884	do	do
322	Zinfandel, 2nd crop	1884	do	do
323	Carignan, Blend Mataro, Blend Grenache, Blend	1884	do	do
324	Amoroso, Dry	1884	do	do
325	Amoroso, Sweet, No. 1	1884	do	do
B	Amoroso, Sweet, No. 2	1884	do	do
326	Sherry, Natural Development	1882	do	do
327	Mixed Grapes	1885	L. L. Jones	Searsville
328	Zinfandel, 2nd crop	1885	Chas. Johnson	Woodside, S'n M'teo

[N. B.—The following samples from George West were mostly prepared experimentally for the Commission and should be classed as produced at the Stockton Viticultural Station.]

NO.	VARIETY.	Vintage.	VINEGROWER.	PLACE OF PRODUCTION OR CELLAR.
329	Petit Bouschet	1885	George West	Stockton
330	Trousseau	1881	do	do
331	Trousseau Petit Bouschet	1885	do	do
332	Sweet Frontignan	1882	do	do
333	Zinfandel	1885	do	do
334	Trousseau Port	1883	do	do
335	Mission Port	1885	do	do
336	Trousseau Port	1884	do	do
337	Frontignan	1883	do	do
	Distillates—			
338	Mission Frontignan	1885	do	do
339	Colombar Prolific Burger	1885	do	do
340	Prolific	1879	do	do
341	Prolific	1884	do	do
342	Prolific Frontignan	1885	do	do
343	Prolific	1885	do	do
344	Prolific	1885	do	do
345	Burger	1885	do	do
346	Folle Blanche Burger	1885	do	do
347	Colombar	1885	do	do
348	Folle Blanche	1884	do	do
349	Folle Blanche	1885	do	do
350	Mission Red	1885	Leland Stanford	Vina
351	Burger	1885	do	do
352	Zinfandel, 1st crop	1885	do	do
353	Zinfandel, 2nd crop	1885	do	do
354	Trousseau	1885	do	do
355	Zinfandel	1885	J. D. B. Stillman	Lugonia
356	Zinfandel, 2nd crop	1885	do	do
357	Blue Elbling, White	1885	do	do
358	Blue Elbling, Red	1885	do	do
359	Red Mission	1882	J. E. Goux	Santa Barbara
360	White Mission	1883	do	do
361	White Mission	1884	do	do
362	Mataro	1884	M. Denicke	Fresno
363	Carignan	1885	do	do
364	Zinfandel Mataro	1885	Bernard & Wente	Livermore
365	Herbemont, White	1885	George Husmann	Talcoa Vineyard, Napa
366	Chasselas, Victoria and Chasselas Violet	1885	do	do
367	Marsanne	1885	do	do
368	Franken Riesling	1885	do	do
369	Sultana	1885	do	do
370	Sauvignon Vert	1885	do	do
371	Green Hungarian	1885	do	do
372	Chauche Gris	1885	do	do
373	Traminer	1885	do	do
374	Pedro Ximenez	1885	do	do
375	Herbemont, Red	1885	do	do
376	Rulander, Red	1885	do	do
377	Norton's Virginia	1885	do	do
378	Cynthiana	1885	do	do

NO.	VARIETY.	Vintage.	VINE GROWER.	PLACE OF PRODUCTION OR CELLAR.
379	Lenoir	1885	George Husmann	Talcoa Vineyard
380	Mataro	1885	do	do
381	Crabb's Burgundy	1885	do	do
382	Gross Blauer	1885	do	do
383	Zinfandel	1885	do	do
384	Brandy of pressed pomace	1885	N. Anticevich	San Jose
385	Red Wine from Norton's Virginia, Seedling and other grapes (Potomac Vineyards)	1884	C. Zander	Washington, D. C.
386	Burger	1885	J. C. Merithew	Cupertino
387	Zinfandel Charbono	1885	do	do
388	Mataro	1884	do	do
389	Trousseau	1885	do	do
390	Trousseau Port	1883	do	do
391	Charbono Trousseau	1885	do	do
392	Pinot	1884	do	do
393	Muscatel	1882	do	do
394	Brandy		do	do
395	Chasselas	1884	D. Lobree	Middletown
396	Claret	1884	do	do
397	Angelica	1885	do	do
398	Port	1885	do	do
399	Brandy	1885	do	do
400	Zinfandel	1880	L. P. Rixford	Sonoma
401	Zinfandel	1876	do	do
402	Riesling	1881	do	do
403	Claret	1884	C. Dezirello	Santa Barbara
404	White Wine	1884	do	do
405	Mataro Carignan Pinot Grenache	1882	G. Niebaum	Rutherford
406	Feher Szagos	1885	Korbel Bros.	Sonoma County
407	Chasselas Fontainbleau	1885	do	do
408	Riesling	1885	do	do
409	Chauche Gris	1885	do	do
410	Burgundy	1885	F. J. Sauffrignon	Santa Cruz County
411	Riesling Sauvignon Vert Chasselas Musque	1883	G. Niebaum	Rutherford
412	Brandy	1871	Sierra Madre Vintage Company	Los Angeles
413	Sweet Muscat	1885	do	do
414	Mission Port	1885	do	do
415	Zinfandel	1885	do	do
416	Muscat Brandy	1885	do	do
417	Blaue Elbling, White	1885	do	do
418	Zinfandel Port	1885	do	do
419	Tannat	1884	C. A. Wetmore	Livermore
420	Mondeuse	1884	do	do

Samples of Raisins.

NO.	VARIETY.	Vintage.	PRODUCER.	PLACE OF PRODUCTION.	EXHIBITED BY
1	Imperial Loose Layers	1885	Geo. A. Cowles	El Cajon	George A. Cowles
2	Seedless Muscatel	1885	do	do	do
3	Imperial Bunches	1885	do	do	do
4	Dehesia Bunches	1885	do	do	do
5	Sultana	1885	Dr. J. Strentzel	Martinez	Dr. J. Strentzel
6	London Layers	1885	J. A. Reddon	Woodland	Lusk & Co.
7	Seedless Sultana	1885	Mrs. G. G. Briggs	do	do
8	Loose Muscatels	1885	do	do	do
9	London Layers	1885	do	do	do
10	Loose Muscatels	1885	Struck & Son	Orange	do
11	London Layers	1885	do	do	do
12	Loose Muscatels	1885	W. B. Russell	Riverside	do
13	Loose Muscatels	1885	A. B. Butler	Fresno	do
14	London Layers	1885	W. H. Wells	Dixon	do
15	London Layers	1885	A. M. Cauldwell	Orange	do
16	London Layers	1885	Miss M. F. Austin	Fresno	W.T.Colem'n & Co
17	Malaga, imported				do
18	Malaga, imported				do

Tabular Reports of the Committe on Wine Exhibits.

The Committee on Wine Exhibits at the State Viticultural Convention held in San Francisco from March 15th to 20th, 1886, consisted of Messrs. F. Pohndorff as Chairman; E. C. Priber for Napa county; C. E. Shillaber, Solano Co.; Dr. J. D. B. Stillman, San Bernardino Co.; Dr. J. A. Stewart, Santa Cruz Co.; N. Wyckoff, Yolo Co.; J. H. Drummond, Sonoma Co.; R. T. Pierce, Santa Clara Co.; Dr. G. Bernard, Alameda Co.; I. Landsberger, San Francisco; Wm. Palmtag, San Benito Co.; W. B. West, San Joaquin Co.; E. H. Rixford, San Mateo Co.; E. B. Smith, Contra Costa Co.; Wm. Caldwell, Sonoma Co.; Captain J. Chamon de St. Hubert, San Francisco. A sub-committee consisting of Messrs. St. Hubert, Bernard and Palmtag who had participated, like most of the members of the Committee, in the tasting of all samples exhibited, selected the samples which were considered the best types exhibited and classed these in two groups, superior that is faultless wines, and good types, having no defects, but not ranking as high as those classed as superior wines.

Re-tasting these selected wines took place on the morning of the 20th of March, and the sub-committee, as well as several members of the Committee on Wines, took part in this operation, which, after the first two hours, was carried on by the sub-committee in union with the Chairman, and after that by a general tasting of the concurring visitors at the Convention Hall.

The following sheets contain the figures of the wines presented for tasting, according to County or institution where made, and the figures denoting which of these wines were classed as superior wines and as good types of the grape variety whereof they were made.

The same is the case with distillates and experimental materials from the grape.

The figures in the last column of this list denote samples, the types of which are worthy of attention and observation for future experimenting.

WINES EXHIBITED.	No. of Samples.	COUNTY.	FOUND TO BE		EXPERIMENTAL.	TYPES WORTHY OF ATTENTION.
			OF SUPERIOR QUALITY.	GOOD TYPES.		
Semillon,	3	Napa County	1	0		
	1	Sonoma County	1	0		
	2	Viticultural Commission	1	1	Experimental	
	1	University	0	0	Experimental	1
Sauvignon vert,	2	Napa County	2	0		
1884	1	"	0	0		
1883	1	"	0	1		
Sweet	1	"	1	0		
1883	1	Viticultural Commission	0	1	Experimental	
Sauvignon blanc,	1	Napa County	1	0		
Verdal, 1884	1	"	0	0		
1885	1	University	0	0	Experimental	
Verdelho 1884	1	"	0	0	Experimental	1
	1	Viticultural Commission	0	0	Experimental	1
	1	Napa County	0	0		
Riesling	4	"	2	0		1
1881	1	"	0	1		
	6	Sonoma County	1	0		
	1	University	1	0	Experimental	
Franken	1	Napa County	0	0		
Riesling	3	Sonoma County	0	2		
(Sylvaner)	1	Contra Costa County	0	0		
Burger	2	Napa County	2	0		
	1	Santa Clara County	0	0		
	1	Tehama County	0	0		
	1	Alameda County	0	1		
	1	Los Angeles County	0	1		
	1	Contra Costa County	0	0		
	1	Sonoma County	0	0		
	1	Fresno County	0	0		
	4	University	0	0		
Folle Blanche	2	Alameda	1	0		
(Peconi Tonar) bl'che	1	University	0	0	Experimental	
Pinot Chardonay	1	Napa County	1	0		
Muscadine	1	"	0	1		

WINES EXHIBITED.	No. of Samples . .	COUNTY.	FOUND TO BE		EXPERIMENTAL.	Types worthy of attention . . . . .
			Of Superior quality.	Good types.		
Moselle Riesling (Moslavina)	1	Napa County	0	1		
	1	Viticultural Commission	0	0	Experimental	
White of Blue Elbling	2	Los Angeles County	0	0		
	1	San Bernardino County	0	0		
	2	Viticultural Commission	0	0	Experimental	
Pinot Valran	1	Napa County	0	0		
White Mission	3	Santa Barbara County	0	0		
	1	El Dorado County	0	0		
	1	Placer County	0	0		
	1	Sonoma County	0	0		
Prolific old	2	University	0	0	Experimental	
White Zinfandel	2	Placer County	0	0		
	1	Sonoma County	0	0		
Marsanne	1	Napa County	1	0		
	1	University	0	0	Experimental	
Orleans Riesling	1	Santa Clara County	0	1		
Traminer	2	Napa County	1	0		
	1	Sonoma County	0	1		
Chauché Gris	1	Napa County	0	0		
	1	Sonoma County	0	0		
	1	University (Santa Cruz grapes)	1	0	Experimental	
Colombar	1	Santa Cruz County	1	0		
	2	Alameda County	0	1		
	1	University	0	0	Experimental	
Sultana	1	Napa County	0	0		
Feher Szagos	1	Sonoma County	0	0		
Chasselas Gutedel	1	"	0	0		
Chas. Gutedel 1881	1	Napa County	0	1		
1885	1	"	0	0		
blend 1885	1	"	1	0		
Chasselas 1882	1	"	0	1		
Chas. de Foy 1885	1	"	0	1		
Chas. Fontainebleau	1	Sonoma County	0	0		
Chasselas	1	Lake County	0	1		
Golden Chasselas	3	Napa County	0	0		
	3	Sonoma County	0	1		
	1	Santa Cruz County	0	0		
	1	Contra Costa County	0	0		
	1	Alameda County	0	1		
	2	Viticultural Commission	0	0	Experimental	
	1	University	0	0	Experimental	
Pedro Ximenez	1	Napa County	0	0		1
Palomino	1	University	0	0	Experimental	1
White Pinot	1	Viticultural Commission	0	0	Experimental	1
White Grenache	1	Alameda County	1	0		
Vert doré	1	Viticultural Commission	1	0	Experimental	
Herbemont	1	Napa County	0	0		1
Green Hungarian	1	"	0	0		1
Boal	1	San Joaquin County	0	0		
Muscadelle (loose bunches)	1	University	0	0	Experimental	1
Muscadelle (compact bunches)	1	University	0	0	Experimental	1
Clairette blanche	1	"	0	0	Experimental	1
Beba	1	"	0	0	Experimental	1
Peruno	1	"	0	0	Experimental	1
Vert doré and Klevner	1	Viticultural Commission	1	0	Experimental	
Sweet Catawba	1	Napa County	0	0		1
Angelica	1	Lake County	0	1		
Sweet Muscat	1	Napa County	1	0		

WINES EXHIBITED.	No. of Samples...	COUNTY.	FOUND TO BE		EXPERIMENTAL.	Types worthy of attention.....
			Of Superior quality.	Good types.		
Sweet Muscat	1	Santa Clara County	0	1		
	1	Los Angeles County	0	0		
	1	El Dorado County	0	0		
Frontignan 1882	1	San Joaquin County	1	0		
1883	1	"	1	0		
Trousseau	2	Santa Clara County	0	1		
	3	Alameda County	2	0		
	1	Fresno County	0	0		
	2	San Joaquin County	1	0		
	1	Tehama County	0	0		1
Tannat	1	Sonoma County	1	0		
	2	Viticultural Commission	0	1	Experimental	
	1	Napa County	1	0		
	1	Alameda County	0	1		
Carignan	1	Viticultural Commission	0	1	Experimental	
	1	Napa County	0	1		
	2	Santa Clara County	0	0		1
	1	Alameda County	0	0		1
	1	Fresno County	0	0		
Grenache	2	Viticultural Commission	0	0	Experimental	
	1	Santa Clara County	1	1		
	1	Napa County	0	0		
	1	Alameda County	0	0		
	2	University	0	0		
Chauché noir	1	Viticultural Commission	0	1	Experimental	
Blue Portuguese	3	Napa County	0	0		1
Bouschet	1	Viticultural Commission	1	0	Experimental	
	1	Contra Costa County	0	1		
	1	Alameda County	1	0		
	1	San Joaquin County	1	0		
	1	University	0	1	Experimental	
Beclan	1	"	0	0	Experimental	1
	3	Napa County	1	0		
Grossblauer	1	"	0	2		
Bundola	1	Contra Costa County	0	0		1
Petit Pinot	1	Viticultural Commission	0	0	Experimental	1
	1	Santa Cruz County	1	0		
	1	Alameda County	1	0		
	1	Sonoma County	0	0		
	1	Santa Clara County	0	0		
Black Burgundy	4	Viticultural Commission	0	0	Experimental	
	1	Napa County	0	2		
	1	Santa Clara County	0	0		
	1	Santa Cruz County	0	1		
Mission	1	Viticultural Commission	0	0	Experimental	
	1	Sonoma County	0	0		
	2	Tehama County	0	0		
	1	Santa Barbara County	0	0		
Spanna	1	Napa County	1	0		
Refosco	1	"	0	1		
Tinto Valdepeñas	1	"	1	0		
Black Farmot	1	"	0	0		1
Lagrein	1	"	1	0		
Cynthiana	1	"	0	1		
Norton's Virginia	1	"	0	1		
	1	Potomac, Washington, D. C.	0	0		
Herbemont	1	Napa County	0	0		1
Rulander	1	"	0	1		
Mixed grapes	5	Lake County	0	0		
Early Black July	1	Viticultural Commission	0	0	Experimental	
Tinta Amarella	1	University	0	1	Experimental	

WINES EXHIBITED.	No. of Samples...	COUNTY.	FOUND TO BE		EXPERIMENTAL.	Types worthy of attention.....
			Of Superior quality.	Good types.		
Tinta Amarella	1	Napa County	0	0		
Mixed grapes	1	Sonoma County	0	0		
Cinsaut	1	Viticultural Commission	0	0	Experimental	1
Mondeuse	2	"	0	0	Experimental	2
Mondeuse	1	University	0	0	Experimental	
	1	Alameda County	0	0		1
Mataro	3	Viticultural Commission	0	2	Experimental	
	4	Napa County	0	2		
	0	Santa Cruz County	0	0		
	5	Santa Clara County	0	1		
	1	Alameda County	1	0		
	1	Sonoma County	0	0		
	2	Los Angeles County	0	0		2
	1	Fresno County	0	0		
	1	University	0	0	Experimental	
Cabernet	3	Viticultural Commission	1	0	Experimental	
	7	Santa Clara County	1	1		
	3	Napa County	1	1		
	1	Sonoma County	1	0		
	2	University	1	1	Experimental	
Verdot	1	Viticultural Commission	0	0	Experimental	
	1	Napa County	0	0		
Merlot	2	University	0	1	Experimental	
Teinturier	2	Napa County	1	1		
	1	University	0	0	Experimental	
Black Prince	1	"	0	0	Experimental	
Petite Syrah	1	Viticultural Commission	1	0	Experimental	
	1	Sonoma County	0	1		
	1	Napa County	0	1		
	1	University	0	0	Experimental	
Lenoir	1	Viticultural Commission	0	0	Experimental	
	2	Napa County	0	0		2
Charbono	1	Santa Cruz County	0	0		
	3	Santa Clara County	0	1		
	2	University	0	0	Experimental	
Aramon	1	Viticultural Commission	0	0	Experimental	1
	1	University	0	0	Experimental	1
Ploussard	1	Santa Clara County	0	1		
Blue Elbling	1	San Bernardino County	0	0		
Balouzat	1	University	1	0	Experimental	
Meunier	1	Alameda County	0	0		
	1	Sonoma County	0	0		
	1	Napa County	0	1		
Gros Mancin	2	Sonoma County	0	2		
St. Macaire	1	"	1	0		
Malbec	2	Napa County	0	1		
	1	Santa Clara County	0	0		
Zinfandel	3	Viticultural Commission	0	1	Experimental	
	11	Napa County	4	1		
	16	Sonoma County	3	0		
	2	Santa Cruz County	2	0		
	9	Santa Clara County	3	2		
	11	Alameda County	7	0		
	1	Contra Costa County	0	1		
	1	San Mateo County	0	0		
	1	San Joaquin County	0	0		
	2	Tehama County	0	0		
	1	El Dorado County	0	0		
	2	San Bernardino County	0	0		
	1	Los Angeles County	0	0		
	0	Lake County	0	0		
	2	University	1	0	Experimental	

Extracts—Tannic Wines.

WINES EXHIBITED.	No. of Samples...	COUNTY.	FOUND TO BE: Of Superior quality.	FOUND TO BE: Good types,	REMARKS.
Of skins and seeds of grapes Cabernet and Verdot	1	Viticultural Commission.			Clean, neutral, decidedly fruity
Cabernets Sauvignon and Franc	1				
Petite Syrah	1				
Mataro	1				Fruity
Dried Vitis Californica	1				Enormously astringent
Zinfandel	1				
Dried Black Burgundy	1				Very deep color
Black Burgundy	1				
Lenoir	1				Color pink tint
2nd crop Mataro	1				
Tannat	1				
Petit Bouschet	1				
Grossblauer and Lenoir	1	Napa County	1	0	
Burgundy Sweet Extract	1	Napa County	0	1	
Burgundy Dry Extract	1	Napa County	0	1	

Ports.

WINES EXHIBITED.	No. of Samples...	COUNTY.	FOUND TO BE: Superior.....	FOUND TO BE: 1st. class....	EXPERIMENTAL.	Types worthy of attention.....
Mission	1	San Joaquin County	0	1		
	1	Los Angeles County	0	1		
Malvasia	1	Sonoma County	0	1		
Trousseau	1	Santa Clara County	0	1		
1883	1	San Joaquin County	1	0		
1884	1	"	0	1		
Zinfandel	1	Los Angeles County	0	0		1
Burgundy	1	Napa County	1	0		
Grossblauer	1	"	0	1		
Burgundy and Trousseau	1	Napa County	0	1		
Pied de Perdrix	1	"	0	1		
Not named	1	Lake County	0	1		
From condensed must	1	Viticultural Commission			Experimental	1
Tinta Cao	1	University			"	1
Moreto		"			"	1
Mourisco		"			"	1
Petit Bouschet		"			"	1
Tinta Cao	1	"			"	1
Mourisco		"			"	1
Tinta Amarella	1	"			"	1
Amoroso	1	Alameda County	1	0		
do Sweet	1	Alameda County	1	0		
do do	1	Alameda County	1	0		

Sherries.

WINES EXHIBITED.	No. of Samples...	COUNTY.	FOUND TO BE		EXPERIMENTAL.	Types worthy of attention.....
			Superior....	1st. class...		
Sherry 1882 Prolific grape	1	Alameda County				
		San Joaquin grapes	1	0		
Sherry (Golden Chasselas) 1882	1	Napa County	1	0		
Sherry 1882	1	Napa County	0	1		
Sherry	1	Sonoma County	0	1		

Distillates.

WINES EXHIBITED.	No. of Samples...	COUNTY.	FOUND TO BE		EXPERIMENTAL.	Types worthy of attention.....
			Superior..	1st. class...		
Chalosse	1	Napa County	1	0		
White Mission	2	Viticultural Commission	0	0	Experimental	
White Mission and Burger	1	Viticultural Commission	0	1	Experimental	
Red Mission	1	Viticultural Commission	0	0	Experimental	
Red Mission and Burger	1	Viticultural Commission	0	0	Experimental	1
Burger	1	Viticultural Commission	0	1	Experimental	
	1	Napa County	0	1		
	1	San Joaquin County	0	1		
Folle Blanche and Colombar	2	Viticultural Commission	0	1	Experimental	
Mission and Frontignan	1	San Joaquin County	0	0		1
Mixed press pomace	1	Santa Clara County	0	0		
Folle Blanche and Burger	1	San Joaquin County	1	0		
Early Black July	1	Viticultural Commission	0	0		
Zinfandel 1884	1	Napa County	0	1		
Verdal 1884	1	Napa County	0	0		1
Riesling 1884	1	"	0	1		
Prolific and Frontignan	1	San Joaquin County	1	0		
Prolific	3	do	1	2		
Prolific Colombar Burger	1	San Joaquin County	0	1		
Colombar	1	do	0	1		
Folle Blanche	1	do	0	1		
Folle Blanche 1884	1	do	1	0		
Mission	1	Los Angeles County	0	0		
Prolific 1879	1	San Joaquin County	1	0		
Not named 1883	1	Santa Clara County	0	1		
do 1884	1	El Dorado County	0	0		1
do	1	Lake County	0	0		1
Brandy 1880	1	Napa (San Joaquin Co)	1	0		
1881	1	Napa County	0	1		
1882	1	"	0	1		
1882	1	Sonoma County	0	1		
1884	1	Viticultural Commission	0	1	Experimental	
Brandy 1884	1	Napa County	0	0		1
Brandy 1880	1	Sonoma County	0	1		
Muscat 1885 Brandy	1	Los Angeles County	0	0		
Brandy 1885	1	Sonoma County	0	0		
	1	El Dorado County	0	0		

Experimental Fermenting Results from Condensed Musts.

WINES EXHIBITED.	No. of Samples...	COUNTY.	FOUND TO BE: Superior....	FOUND TO BE: 1st. class....	EXPERIMENTAL.	Types worthy of attention.....
Unfermented condensed Zinfandel must	1	Lenk Wine Co., Toledo, Ohio, Sacramento Co. grapes	0	0		
Fermented condensed Zinfandel must	2	Viticultural Commission Sacramento Co. grapes	1	0		
Fermented condensed Mission must	1	Viticultural Commission Sacramento Co. grapes	0	0		
Fermented condensed White Zinfandel juice	2	Uuiversity, Lake Co. grapes	0	0		
Fermented condensed Mission must	1	Lenk Wine Company, Toledo, Ohio Sacramento Co. grapes	0	0		
Fermented condensed Chasselas must	1		0	0		
Fermented condensed Muscat must	1					
Fermented condensed Catawba must	1	Same Ohio Co. (grapes of Ohio)	0	1		

The following 22 samples were tasted particularly to observe if any flavor or taste not belonging to the variety appeared, or if they had been influenced by the flavor and taste of the resistant American stock on which the vinifera, of which the wines had been made, had been grafted, viz:

From Grafted Vines on Taylor Stock.

No. of Catalogue—				
317	3 35	Bouschets	Alameda County	7 samples.
	11	Petite Syrah	do	
	37	Cinsaut	do	
	38	Aramon	do	
	120	Mondeuse	do	

From Grafts on Riparia Stock.

	367	Marsanne	Napa County
	370	Sauvignon vert	do
	371	Green Hungarian	do
	374	Pedro Ximenez	do
73	380	Mataro	do
	382	Grossblauer	do
	69	Malbec	do
	71	Zinfandel	do
	72	Carignan	do

10 samples.

From Grafts on Californica Stock.

1		Cabernet Franc	Alameda County
12	420	Mondeuse	do
24	25	Semillon	do
		Sauvignon Blanc	do

5 samples.

The fact that every one of these samples are possessed of a frank and a clean taste and flavor, and not in the least influenced by the resistant stock in their expression, was found by all who tasted these wines.

WINES EXHIBITED.	No. of Samples...	EXHIBITED BY.	FOUND TO BE		EXPERIMENTAL.	Types worthy of attention.....
			Superior....	1st. class...		
Golden Chasselas	2	Viticultural Commission	0	2	Experimental	
do plastered	1	do	0	0	do	1
Verdelho	1	do	0	1	do	
Sauvignon vert	1	do	0	1	do	
Semillon	1	do	0	0	do	1
Trousseau Port	1	do	1	0	do	
do Dry	1	do	1	0	do	
Pinot	1	do	0	1	do	
Sherry	1	do	1	0	do	
Trousseau	1	do	0	0	do	1
White Grenache	1	do	0	1	do	

UNIVERSITY OF CALIFORNIA

FIRST DAY.

Monday, March 15, 1886.

EVENING SESSION.

In calling to order and opening the Fourth Annual State Viticultural Convention, the President, Arpad Haraszthy, said:

"I am pleased to announce to you the opening of the Fourth Annual Convention under the auspices of the State Viticultural Commission. Our interest is growing from day to day; the interest in this convention is likewise growing from year to year. The first one that we had some four years ago drew general attention, and many of you will remember the magnificent display of grapes, in some instances from one hundred to one hundred and sixty varieties being exhibited by a single person, and I believe over two hundred distinct varieties were shown in this hall. The following conventions illustrated the various qualities of wines that were submitted from these new varieties, as well as bringing together a great many of those wines which had never been prepared before, from the same qualities of grapes from different parts of the State. This comparison, without premiums, but in friendly contest you might say for the opinions of your neighbors and others in different parts of the State, have redounded to the great benefit and advantage of this industry. Last year especially was an interesting one in the matter of the comparisons of these varieties that were of more recent importation, and known varieties made from single grapes in different parts of the State. The knowledge that was acquired has been of a value that can hardly be estimated. It has resulted in the replanting or the regrafting of nearly all of our vineyards up to a certain extent in size. Everybody now is wishing to reproduce some of those qualities that have been offered here for comparison and that have been so successful. If the convention had not been so successful and the public spirit of the various wine growers who had these rare wines to exhibit and who offered them to the public for comparison and for study had not been so magnificent we would have been now exactly where we were ten years ago. A new state has arisen in development, a new competition in that every one is trying to have the best vineyard planted with the best varieties. We have progressed as you will all recognize. And if you do not recognize the fact I have figures here that will show you what has been done in the last ten years. I have gathered from reliable statistics the following: The export in 1875 of California wines, in all directions from the State was 1,031,507 gallons. Five years later the export more than doubled; it was then 2,487,353 gallons. In 1885, last year, under the pressure of a very large crop and the resulting influences of low prices for wine and in spite of all prognostications the export was larger still; it amounted to 4,256, 224 gallons of wine and 263,840 gallons of brandy. Gentlemen, I congratulate you upon your efforts. You have in ten years' time quadrupled your exports. The figures which I give you are taken from the custom house reports and are entirely reliable.

The cause of this grand increase is due first to the improvement in the quality of your wines, and better appreciation of them, both at home and abroad; second our increased production. Wherever there is a surplus there is an attempt necessarily made to get rid of that surplus. New efforts are introduced and new enterprises are starting in every direction. That is necessarily the result of large crops. Had you made three or four million gallons of wine you would have been limited possibly to that amount and perhaps have had a surplus in hand out of that. No other reasons can be given for the increased exportation. Let us see to the making of better wine, and more of it, and we can safely leave the market for future consideration. However I must caution our over sanguine producers not to expect too great a return for their products until the market has been firmly established, and to those who are about entering on the seductive pursuit of raising grapes I must caution against paying an extravagant price for vineyard land. That is an important factor in your profit. The time has not arrived when you can pay an exhorbitant price for vineyard land, in spite of what land agents may say to you and the possible conclusions drawn from the newspapers. They never hold, they are flighty, and you certainly will be misled if you follow their advice. I warn every person, and I lay great stress upon this, who would not be satisfied with a return of $35 to $50 per acre that he had better carefully stay out of the business for at least a number of years. You have all of you noticed very likely, in newspapers, of from $150 to $400 profit per acre, and that is given to you as an inducement to go into the business. The amateur wine growers who have had experience do not listen to such stories except to smile at them, but I am afraid that a great many other people think they can put out their money and then go to sleep afterwards. They will be sadly disappointed.

In a general manner, among other things, I would like to draw passing attention to the duties that devolve upon this Commission. It is the province of this Commission to give advice, as good, but mind no better than it is in its power to give, in the selection of varieties of grapes at the time most proven, and imparting such knowledge in cultivation and pruning as is best known; also as to the mode of fermenting wines and giving information as far as lies in their power as to the manner of taking care of and ageing those wines; likewise the

selection of proper lands for the growing of raisins, and the method of curing the same.

These duties I claim the commission has done to the best of its ability and with unabated zeal. Thousands of experiments have been made in these lines and their fruits are already beginning to show themselves. It is also one of the duties of this commission to watch with a jealous eye any matter of legislation that might either impede or advance the interests of viticulture in our State. And I assure you gentlemen, to perform these duties it takes up a great deal of our time. It is also one of our duties to bring to the notice of consumers both at home and abroad a knowledge of the cheapness, the quality and the purity of our wines. This is a work that the commission has laid its hands to, as has been shown by various publications of the commission, and from numerous reports that emanate, or information that comes from the commission. In fact any knowledge of any importance, or any experiment that has been undertaken that might be to the advantage of general viticulture in the State is always sought out and investigated by the commission to the fullest extent of its means and power, and they pronounce upon it as far as their knowledge goes for the time being. We have cautioned a great many people in certain things that have borne good fruit and they are now getting the benefit of it; on the contrary we have advised a great many people, with our limited knowledge, to do certain things that we afterwards had to retract. Knowledge is all the time progressing. We are learning every day. Things that we thought were essential twenty years ago we find now are perfectly useless. So it is with our experiments. We are only at this moment emerging from the darkness; we are beginning to see an actual future within our grasp and a very near one. At the present time last year, to come to a point, I mean a year ago, there was a very large crop in this State, one that was estimated at between fifteen and sixteen million gallons. The requirements of this State for shipment and for home consumption is between eight and nine million gallons, not over. Under the influence of this very large produce, as soon as it became known that it was a fact that fifteen million gallons were made, there was a general hue and cry of over-production. Most people did not take into consideration the fact that at least one-third or more of that was only fit for distillation. Much of it had been made into wine after the rains spoiled the grapes, from rotten or immature grapes. So that contracts that had been made for 22, 23 and 24 per cent sugar were endeavored to be filled at from 16 to 18 per cent. This necessarily reflected upon the quality of wine in certain districts. Some favored districts escaped this and their wines were easily sold at good prices. This however was the exception, the majority having to accept whatever prices were offered. There was an attempt made in the community, whether by outsiders, consumers or small jobbers in the eastern states I am not going to say, to decry our wines, and the result was that everybody rushed like a flock of sheep and threw their wine on the market at the same time and were then surprised that it was not immediately taken up. The result was for a few months disastrous, but I am glad to say that at this moment the market is firmer than ever, and from present appearances I doubt whether we have wine enough to carry us over to the next vintage. I fear therefore that we are going to have a very serious set back by being compelled to send to the eastern market the bulk of the new wines of 1866.

Among the labors of the commission, outside of experiments in different kinds of grapes, general attention was called to the process of condensing must. This project seems to be in its infancy. It is claimed for the process that the must can be reduced so as to retain the special qualities of the grape and afterwards be refermented at other points by the addition of the necessary amount of water—that it can be safely fermented out. When the claim was first made I had my doubts as to the success of the process, and, within a week, at the University, I had those doubts confirmed, and also by some experiments made by the viticultural commission, that the especial characteristics and quality of the grape were not retained. There is however one thing certain that this must can be made in that way, and it might be made at a cheap rate and would perhaps be a great relief to the market. Future experiments however will have to be tried to show the advantage of it outside of the possession of saccharine matter and grape juice.

Another of the important works of the commission has been to draw attention to the almost universal adulterations that are being carried on in the eastern states. At this moment they are hard at work on this subject. This I think is one of the most important works that has been before the commission—that of trying to check, or controlling, if not checking, by legislation, those audulterations that are being made, where port wine is a decoction which as a plea may have some dried grapes, or may have none at all, where sweet Muscat, or Sherry or Angelica, or whatever they are willing to call it, or your Hock wines are made out of whole cloth at various manufactories. It is unnecessary to tell now how they are made; that may transpire during the various discussions of the convention. If we are successful in the measures that our Chief Executive Officer, Mr. Wetmore, was sent to Washington to try and pass, a firm and proper law for the protection of all legitimate wines inside the whole of the U. S. and not for ourselves alone, California

at one jump will in one year increase her export at least from 3 to 4 million gallons. The matter does not lie simply in the fact of adulterations. That you have got adulterated wine is a great fear of the eastern people, a people who are different from what we are and who are suspicious in their ways and in their mode of living, and the fact that there is a great deal of adulterated wine on the market makes them suspicious of all wine, and you may talk California purity as much as you please yet you cannot convince these people; there is a lurking fear that they are going to get adulterated wines. And unless they can come to our cellars and buy they do not want to buy from our agents in the east. That is the universal experience of our dealers here. By reason of that there is a great deal of wine lost to our eastern friends and of profits to ourselves. If this law is passed, which we hope will be passed, there will be an immediate revolution here in our wine trade. To further the general knowledge among consumers in the east of the prices at which our wines could be obtained, and for the purpose of showing the qualities of our ordinary wines we had an agent sent forward, and I shall call upon the committee who had the matter in charge, the Hon. M. M. Estee, to address you when I have closed these brief remarks. Mr. Pohndorff was selected by that committee, as you all know, to go to the Louisville Exposition and start there with samples of wine and make them known to the public generally, not to sell wine for any firm or for any individual, but during his stay there to show how wines can be made and that it was good wine and cheap wine. I do not doubt that in a very short time fruit will be borne from these efforts. Mr. Pohndorff also represented the wine growers in the New Orleans Exposition, and it is to be regretted that his samples were limited to a few bottles or a few gallons, otherwise he could have done a great deal more good.

Before concluding I will state that this convention is intended solely for the purpose of meeting wine growers of the various sections, to compare notes with each other, to acquire knowledge of making a marketable wine. It is not intended to arrive at any positive result, to do anything and say that we have arrived at such results and make it final. But gentlemen above all I caution you that this convention is not one gotten up like a political convention. Where we meet with the intention of passing resolutions. I trust we shall not see any resolutions passed here or offered unless they are absolutely necessary for the time being. It is not a place of resolutions. We have nothing to resolve upon. That rule will be strictly laid down and adhered to.

I will now ask the Hon. Mr. Estee as chairman of the committee on the Louisville Exposition to address you.

HON. M. M. ESTEE.

Mr. President, Ladies and Gentlemen, I was not aware that I was here to-night to talk, but I can say what we did about the Louisville Exposition, or rather what Mr. Pohndorff did there, for he did it all. Your commission appointed a committee to attend to this matter, and I will first read the report written by the secretary, and signed by the chairman of the committee and the secretary which will show you the history of the proceedings, under the commission, by the sub committee of grape growers and wine makers appointed for that purpose, and to raise funds to send Mr. Pohndorff to Louisville. We raised some funds but we did not raise enough. I will first read the report of the committee.

GENTLEMEN :— Your board recognizing the importance of representing the viticultural industry of California, at the Louisville exposition held last year, appointed a committee consisting of Hon. M. M. Estee, H. P. Livermore, W. B. West, Captain J. Chamon de St. Hubert, J. H. Drummond, E. W. Maslin, Hon. W. McPherson Hill, D. C. Feeley, I. Landsberger.

At the first meeting of the Committee, Hon. M. M. Estee was appointed Chairman, and C. R. Buckland, Secretary.—It was at once agreed that it would be advisable to represent our industry at Louisville, and Mr. F. Pohndorff was the unanimous choice of the Committee, as the most competent and best gentleman to act on our behalf.

The chief difficulty that presented itself, however, was to obtain the necessary funds for defraying Mr. Pohndorff's expenses. A subscription list was opened, and the sum of $614 was collected.

The State Viticultural Commission, volunteered to pay all Mr. Pohndorff's railway and hotel expenses, and courtesies were extended on the Southern Pacific and Wabash lines.

Having entered into an agreement with Mr. Pohndorff for a period of two months, that gentleman left San Francisco on Sept. 2nd. At the expiration of the period agreed upon, Mr. Pohndorff proceeded voluntarily to New Orleans, where he was engaged working in our interests for three months longer, without any salary whatever. His actual expenses incurred were paid by your Commission.

The importance and value of the work done by Mr. Pohndorff is incalculable. His energies have been devoted unceasingly, both day and night, to our interests. His enthusiasm in our cause is well known to all of us, and, while enthusiastic, he has yet that rarer faculty of never over-stepping the bounds of truth when urging our good cause. He has drawn the attention of thousands of consumers in the Eastern and Southern States, to the purity of our wines, the excellence of our grapes and raisins,

their cheapness and their beneficial sanitary effects.

The work performed by Mr. Pohndorff, will be the means of increasing and extending our market for viticultural products. It may not be felt immediately, but, that the ultimate results will be beneficial, nobody can venture to gainsay. Appreciating his labors as we do, and regretting the fact that your Committee has been unable to remunerate him for his valuable services at New Orleans, we would respectfully suggest to all viticulturists, and especially those who will meet at this Convention, that they should acknowledge the services rendered by Mr. Pohndorff, in some substantial pecuniary manner. All members of this Committee will be willing to receive subscriptions for this purpose.

M. M. Estee,
[Signed.] Chairman,

Charles R. Buckland, Secretary, San Francisco, March 15th, 1886.

Mr. Estee.—We may add in this connection that Mr. Pohndorff devoted himsilf almost exclusively to this work. I am informed, and I did not get it from Mr. Pohndorff, that he was engaged from about seven to eight o'clock in the morning until nine, ten, eleven and even twelve o'clock at night, because, at that Exposition people would drop in all the time, and the result was that our agent, as we called him, although he did not get much pay for the honor of his agency, was there to represent the interests of the viticulturists of this State, and I happened to meet a gentleman who lived near Louisville who was there. He did not know Mr. Pohndorff at all, but he called there one time and I believe he tasted some wine, or at least he examined it and he voluntarily spoke of the remarkable attention to our interests of Mr. Pohndorff. Now what I want to add in this connection is this, there must be some, or ought to be, more money raised for Mr. Pohndorff. He was gone a half year and over. He left his business here to look out for our interests. He first went to Louisville and stayed there during the period which he agreed to, and then, finding it was necessary to go to New Orleans, he went there, and he met with a mishap on his way back. Like most viticulturists he was not accustomed much to the ways of the world, so he got robbed and lost a little of his money in that way. Now we will have a little subscription here during the session of this convention, not with a view of asking anyone to subscribe that does not want to, or making it at all compulsory, in fact I have not spoken to the President about it at all, for those who are willing to assist us and wish to give Mr. Pohndorff a decent salary while he was away attending to our business, and I hope there will not be anyone say no.

I think the last six months, if I may be allowed to refer to the last six months, have been more eventful than any other period of viticultural industry in this State, and they have been the most successful. In the first place Mr. Pohndorff went east and stopped at Louisville and then on to New Orleans. Then the Chief Executive Officer went east, and everybody that reads the newspapers knows that he talked a congressman even right out of his boots. I got a letter from Mr. Morrow the other day, and he said it was no use talking, that Wetmore ought to be in Congress instead of some of them. The real fact is, seriously, he has done a wonderful sight of good and he might as well know it. It does not do any harm to tell folks when they do right. I don't find a man or a woman ever get so cold that they do not want to be pleased with themselves, and I think when they are not pleased with themselves once in a while they will not be pleased with anyone. The fact is he went there and found it uphill business as I am informed and I know it is. The senators and congressmen were gotten together and manifested some interest, and Senator Stanford presided at his first meeting. They had a big meeting and members of congress were there from elsewhere. The fact is they don't think much of Californians out there. When I went east a few years ago, as I was going up this side of the mountains, I looked down and thought I was leaving the biggest and best country in the world, and I think so yet. I thought a Californian was a pretty big man, and a man whom they would pay attention to. I got over into Nevada and they did not pay quite as much attention to a Californian there as they did here, and the farther I went east the less a Californian was, until at Ogden the smallest man I could find was a Californian, and when you get east to the large towns of Chicago, St. Louis, New York, Boston, Philadelphia and forward to Washington, I tell you Californians and California's interests are lost. They have not much weight there, our five or six congressmen and two senators. They have very little weight with a great number representing the large interests and big cities of a populous country of sixty million people. We have less than a million, and it is marvelous how we have influenced them as much as we have. Mr. Wetmore has done considerable and he will tell you what he has done. I expect to get a letter from there every day speaking of the result that we anticipate from Mr. Wetmore's visit.

1st: we expect that they will know more about our wine from this time on than they have ever known in the past.

Next: that we will have some more beneficial legislation, and as our president states we must be careful to make some pretty good wine and not ask too high a price, but be perfectly willing to sell it for what it is worth. I was talking to a gentleman, a friend of mine, who is in this convention. He went into an interior town and he did

not start a saloon even, but he opened a place where he could give a man a cracker and a glass of wine for five cents—a great big glass of wine, you have heard these beer drinkers call them schooners, and a cracker for five cents. The workmen took to that and it was a good thing for them, and it looks to me that even that man is going to make more out of his five cent drinks than he will by selling it at wholesale. He tells you that he has started the men in the right road, that is what he calls it, drinking wine. He told me that the place had fifty inhabitants where they drank beer and whisky, the water was so bad they had to drink poor whisky and a little brandy; but he says I have reformed them. He says that the fifty people drink three hundred gallons of wine a month, that is pretty good for a small town and that is what he calls reforming the society there. I have not mentioned the gentleman's name, he will probably speak here before he leaves. But that only shows, as I believe, that the introduction of a pure California wine is a good temperance lecture in any community—that is my candid judgement. The more whisky a man drinks the worse it is for his constitution; it hurts him, and no man ever took a drink of whisky in his life, unless he has a cold or he is off hunting, I go out hunting once in a while, that it does not hurt him. But I tell you that a man who drinks moderately a pure wine at his meals will never drink anything else between meals. It is the between meal drinker that gets to be the drunkard. The man that makes four or five rests in going down town to take a drink of whisky at the corner grocery, is the man that is dangerous to the community and himself. But the man who, in his own family, takes a little pure wine at his meals never hurts any body in the world. I heard a very eminent divine say the other day, "I will look forward with thanks to God when the time shall come when none of this vile stuff of whisky shall be drank and when the people if they do drink, and I don't say that it is wrong for them to drink, will drink pure California wines." That was the expression of one of our eminent divines.

The President—We will now be pleased to hear from Mr. Pohndorff.

MR. F. POHNDORFF.

Towards the end of the old year the concurrence of the public to the New Orleans Exposition was a very slender one, certain days excepted, when a good many appreciative people could be touched, and occasion was taken to show what California good wines are like. I also made use of my time by examining what little other States had exhibited of their vine products. Access to their sealed bottles was difficult and the small collections of wines from native varieties were to the public a simple matter of conjecture as to how their contents might taste. Nothing but the evidence that wines are made in other States was given by those exhibits. This way of showing bottles for such purpose only seems to be folly to say the least, and can in no way conduce to results of any interest to both producer and the consuming public. The year closed with a very interesting visit to the Exposition of a representative gathering of journalists from the Eastern and Central States. An excursion from pseudo-sober Iowa offered less attraction to viticulture. Still, several gentlemen did not disdain to hold an inspection, not a furtive one, of what we produce, and they partook of it with the pleasure of connoisseurs. Some of these gentlemen that came frankly into the camp of freedom of the palate, enjoyed a hearty laugh at my pitying those Iowans who are debarred from using wine in their State, and assured me that any one can get what he wants in Iowa, but that unfortunately spirits were the rule and a bottle of decent wine is less easy of access. The fact that prohibition simply perverts our free citizens, makes hypocrites of them and leads them to indulge in liquors of the fiercest nature because for stealthy sale these are most convenient, being most concentrated and less voluminous, throws responsibilities upon those wrong-constitutioned consciences of the advocates of dyspepsia, which must weigh heavy on the day of judgment. I may say here that I gave ample explanations to Iowa gentlemen respecting our viticulture, with such printed matter relative to the same as we could abundantly furnish, for, besides the S. F. Merchant, there is a stock of viticultural literature at the headquarters of our department at the Exposition.

The complete assemblage of editors and their ladies, numbering nearly thirty persons, favored that department with a visit, at which I am glad to say no one refused the beverages offered, and many were the expressions of satisfaction with our good wines, and on the part of several gentlemen with the pony glass of grape brandies of which they partook.

Seeing the appreciative disposition of the press excursionists, it was but natural that our California viticulturists should give them a small provision of what had so delighted them, and consequently I gave them the chance to savor their meals, on their return journey in the Pullman cars, with some good wines. Records of the good impressions of these have been published in several of the papers whose editors drank them.

As far as the New Orleans press could be influenced to express facts relative to our viticultural efforts and results, it has been done and the principal dailies have not withheld their acknowledgment. The New Orleans *States*, above all, deserves thanks for the interest taken in our industry.

I have made good use, as far as it was possible, to cultivate the acquaintance with Exposition Commissioners of Eastern States who are practically interested in grape growing. Having ample means at hand to give information about our industry on this Coast, my task was as agreeable, as it was accepted with interest. The discussions with several intelligent gentlemen on the subject have given scope to repetitions in agricultural papers of sister States, where thereby increased attention is excited and the bonds of friendship drawn closer with us, for California experience and California successes are congenial and considered instructive by Eastern viticulturists. This circumstance, insignificant as these initiative steps may be, is of value for the subsequent information of the National Grape Growers Union, effected through the energy of Mr. Wetmore in New York. I have found that the choice as Committemen of some of the gentlemen referred to was quite agreeable to them, and they will work for the common good in their States, with energy and persuadedly.

Mr. Wetmore, who passed through New Orleans, staying only thirty-six hours there, judged it opportunate that I should join him and assist as far as I could in the important matters which called him to Washington, and incidentally also repeatedly to New York. Thus I stayed the first two weeks of January in New Orleans and on my recent return from Washington passed only a few days in transit at New Orleans.

The rest of the exhibited wines are in the hands of Mr. Charles B. Turrill who will, at the conclusion of the Exposition, take care of them as the exhibitors direct. Of each sample exhibited he will, if all consent, keep one or two specimens for future use at any other Exposition.

And now after this relation, I ought to resume my observations and the opinions gained thereby during my long stay in the East, in order to communicate practical conclusions for our industry.

I do not overestimate the disposition of hundreds of thousands of individuals and families in Kentucky to adopt our wines and become purchasers of them. The surrounding States accessible by easy transportation from Kentucky contain millions of willing customers of *good* wines. That our customers, or rather the customers of the customers of the distributing California wholesale dealer, are yet actually few, this is not the fault of the latter. Good wines are sent by our merchants, but what is sent is a driblet, not more. And that this is so and will remain so, if improvement of matters is not sought, is natural, simply because retail prices in Louisville and all the region dependent upon that center are excessive, and cause our wines to remain a luxury instead of an article of diet obtainable at a reasonable price. The difficulty for popularizing our wines among the masses willing to use them lies with the third and fourth hands from which the consumer can obtain them. Retail prices of our wines, when straight, are so outrageously high, that the public have a perfect right to repudiate their acquisition and adoption as a family beverage. I repeat, good, straight wines, of which the public are assured that they are such, will easily find purchasers without number, if the price be reasonable. This is not now the case in Kentucky and the surrounding States.

The market for our pure wines is to be found in those parts, for the poor beginnings are not worth mentioning. It wants energetic efforts to right things and develop the market in a proper way. The American public will appreciate good wines at reasonable prices by becoming purchasers for millions of gallons more than we can produce perhaps in the next few years, during which the work of familiarizing the people with our product practically can be taken in hand—provided we can offer *quantities* of good and truly pure wines.

The absorbing power of the wine market of New Orleans, which is a constituted one, is elastic, very elastic. You can rely upon this. I have drunk at my meals constantly ordinary Claret, and my host volunteered the admission that it was California Claret sold him at fifty cents a gallon by the ten barrels he buys at a time. The average consumer, not inquiring about it at the French restaurant, may drink it under the impression that it hails from across the Atlantic, although no sign of similarity is apparent, except that when drank diluted, as it generally is, it holds color. I have abstained from inquiring about commercial matters relating to our trade- wines. I have carried my delicacy so far, that I have not approached any wholesale dealer or agent of a San Francisco shipper. Traveling with a gentleman to his country seat, thirty miles from New Orleans, I was introduced to a neighbor of his, who happens to be one of the largest distributors of wines received from our State. Voluntarily, he gave me information which I did not extract by questioning him. Thus I came into the possession of knowledge of what are the attributes of a merchantable wine in the New Orleans market. Quality only refers to soundness in a general sense. The character of a wine only need be roundness —a certain compactness. The principal merit which induces to order wines from California, is cheapness and *color*. Color above everything. However sweeping these remarks may seem, they are what I learned about wines for the New Orleans market, and I have bought often a glass of them at different places for my meals. The prices of 50 to 60 cents for ordinary Claret and 70 or 75 cents for Zinfandel at the grocery stores at the New Orleans retailer com-

pare, nay contrast, favorably with what in many cases (I do not know if yet in the majority of them) is hindering our wines in retailers' hands on the Pacific Coast, to become still more generalized. Unreasonable cheapness may involve abasement of quality. It owers the standard of wines A *good* wine can defend its value. No good can come from running prices down. There is no absolute necessity of fighting for the smallest margin in order to sell quantities. We cannot blame trade to strive for this end. Outlets must be found for very common qualities and the shipper who puts these wines into pleasing shape is certainly a benefactor in a certain sense to the producer. But grading should be insisted upon and the dealer should in any case discriminate to whom he sells. Doubtless many such goods pass into hands which convert them into what ought not to be tolerated and what is the object of legislation, adulterations. Indiscriminate throwing on markets any kind of wine, consigned and distributed at haphazard, is blamable. Quality is what ought to be looked to and quality ought to be the common aim of all producers.

The grower whose efforts are directed to raise the standard of his product is the sufferer if an unsound system in consuming markets of supplying at reduced prices a merchandise which, if really good ought to be paid for a little better, is gaining ground. The consumer does not feel the two, three or five cents more charged for a good wine —the commission merchant or distributing agent does not suffer from a slight augmentation of price and the shipper cannot or ought not to press the producer down to a purchase price in which the two or three or five cents may exactly form the whole margin over his cost of production, his only profit. These considerations are of great importance. They are vital for the welfare of all concerned. I found that in consuming centers the appearance to the eye of a diluted wine, still being like Claret in color, seems satisfactory. You cannot blame the supplying shipper to consider this important for his trade, for he has to follow the popular taste. I learned that a lot of wine from a California vineyard, unprepared otherwise than cleared by fining, could not find a bidder, although its quality was considered in this State really good. Of a wine sold from a grower's stock here in New Orleans I was told that it obtained a higher price, or at least that the holder of it in New Orleans required a higher price, than that paid for ordinary shipping wines. This wine was with emphasis called proprietor's wine and this circumstance of extraordinary confidence in the article, more than its shape, which is distinct from the ordinary well-colored wines, justified the pretension of a higher price.

This and sound logic may indicate that there is a chance of altering both the style, the taste and prices in general in New Orleans, bold as it may seem to swim against the current. On my return I have learned how reduced stocks of wine are in California. This will be hindering the practical beginning of reform in a certain sense now, but the honest distributing merchant will doubtless agree with me that such reform is both necessary and ought and will be inaugurated as soon as the shoe will commence pinching seriously, as we foresee it will, when the quantities our vineyards produce will be twice as much as our shippers can handle. That period will probably begin from the next vintage, and if all goes well, the task of reform in the great market of Louisiana will be eased by the appearance of considerable produce from varieties of deep-tinted fruit, which as yet are scarce in yielding.

The wines sent by our merchants to the South may be good, some may be very good when leaving our State. But we shall easily perfect our raw ordinary wines and make them far more acceptable than what is as a rule consumed in the South, both in color, body and expression. This latter requisite we cannot meet with now, at least in most cases.

Reform would include a bettering of prices. No complaint with those ruling for what is sold retail as California Claret can be made. On the basis of the reasonableness of the prices at which our wines, even if marked by foreign labels, are made accessible to the consuming public, a healthy and increasing business is secured there. I said the New Orleans market is elastic. This is equally a fact in other Southern markets. I am not able to give figures. I judge more by the aspect of the merchandise and the prices obtained, and do not know how much the existing circumstances can influence financial features of the case. But I know and insist upon it, that the elasticity of the Southern wine market is considerable. Intelligent people of the educated and well-to-do class in New Orleans who have examined the wines exhibited, have expressed constantly their fear of non-purity of California wines which they can purchase. Surprised at more than one wine I could show them, they stated that they and thousands of families would be glad of paying a decent price for such wines or some wine in which they could have absolute confidence of straightness, were such wines obtainable. Now I know not what is done with many of our wines, and if there is really so much to be feared from handling of them in New Orleans, but I know that the people with whom I spoke, told the truth and that superior wines in safe hands will find a ready outlet there and in quantities, for in Louisiana we have the agreeable circum-

stance that wine is a family table beverage in thousands of households.

The dealers in our State may find all the difficulties they claim to meet with for the increase of sales. The nature of the merchandise and the way of finding outlets is such that it is impossible to work in the habitual groove and increase consumption. We ought to move, ought to influence the American public in favor of our *pure* produce. Not by word and advice alone, but by practically providing the means of security for the purity of what reaches the consumer. The supervision, as far as it be possible, of the third and fourth distributor, the retailer is necessary. The practical way, however, is to adopt such means as will convey to the consumer our product free of the excess of profits which are stuck on unduly and scandalously in retail. How to effect this, you must deliberate. The means will be in your hands. Be assured every one of you gentlemen who strives to produce good wines, that the American public will absorb whatever is really good and reaches the people at prices not doubled, triplicated or quadrupled by unjustifiable profits exacted by the retailer. Over-production of *good* wines is a myth, a delusive fear.

In conclusion I may yet add, that insignificant as may have been what the efforts of a single man in the way I could work in behalf of our industry could accomplish, the consequences of this attempt to touch some few thousands of the many millions populating this great Continent are not lost. California viticulture, as it could be illustrated truly, meets with sympathy, prohibition notwithstanding. This nation has not lost that virtue, good, common sense, which repulses aberrations. We have received innumerable expressions of sympathy for our State and our industry and the good wishes for success in our efforts for progress. I wish I could have done more. My mite was willingly given. I worked as conscientiously as I knew how and with truth alone, no brag entering in what has been said and done. California viticulture has made one more modest conquest. My thanks for the confidence that I would work for the best, which accompanied me on my humble mission.

THE PRESIDENT:—Gentlemen you have heard this very valuable report of Mr. Pohndorff, and I should like it followed by a general discussion upon the points suggested by him, and such other ideas as may be brought out by the convention. Any information that could be suggested would be exceedingly acceptable. I would like to hear from Mr. Priber. Mr. Priber is the advocate of California wines in St. Louis and that whole district. The babies cry for it and the ladies cannot go to sleep without it. Mr. Priber has taken a very active interest in viticulture. He is the representative of the Napa Wine Company and knows a great deal about the difficulties of the trade, and also the disadvantages met with in the east.

MR. E. C. PRIBER.

It is a fact that I have worked for over a dozen years for California wine, and I have worked when it has not been easy, if I said it was California wine. It is changed since then and I am satisfied that with the efforts of gentlemen like Mr. Wetmore and Mr. Pohndorff that it will not be long before it is as popular as any wine in the United States. When I began to sell California wines in the heart of the mercantile world of America, and I found they treated me well, I could not speak of California wines, they would not listen to me. But still I think the greatest difficulty we have is that we do not handle our wine properly. I do not say that it is in this State, but it is handled after we send it from the State. It is not in a proper condition. Our packages for instance are a very important item. The wine is not packed as they want it there. Formerly we sent our wines in large packages. We have changed somewhat but still it is not done very well. The southern part of the State has sent mostly these long pipes, but they have in a certain measure done away with it and do not ship in puncheons —they send it in barrels, and I think it is a good thing. The package has much to do with our wines, we must make it as handy as possible for the retailer. By the retailer, I do not mean your saloon man, but I mean the man who brings it to the customers, the family. He wants to sell in small packages, and he must not be compelled to draw it off several times. And we must not send wine that is not clear, and we must send it so that he can have the same repeated. Formerly when I commenced to deal in California wines, I studied the imports of New York, particularly the Bordeaux which was a certain quality of wine that they had received for years and years, and the consumer knew what he was to receive when he ordered it. With California it has been different. We send to-day an article that pleases exceedingly, and when the order is sent to repeat or duplicate, in three out of four times, they do not get the same article. This was partly from our limited knowledge, and partly that our product was so small that we could not always replace what we had sent. With a larger production it will change. As soon as our cellars are filled with good wine I think we can easily develop a trade. The vintage of 1884 was a large vintage and the first four years left a surplus, but did a great deal of harm from its bad quality. I suppose you are all aware of the fact that we could sell 1885 better than 1884, and I am very glad to learn from the papers that 1884 has almost gone out of the vendors hands. With the wine of 1885 we will be able to build up our reputation, I know by my own experience, having seen that of 1885 in the east. They send orders

notwithstanding that prices have been exceedingly high compared with former years. I hope that the vintage of 1886 will give us both quality and quantity, for, so far as I can judge, we have no surplus wine to market.

I do not doubt that Mr. Wetmore's visit east will bear fruit immediately. I must say that I have personally felt it already. The wholesale merchants, importers and the largest houses in New York, say that the public take interest in our industries. The public want California wines and they cannot always get them. This imported liquid has not at times even any grape juice. The public learn of this through such efforts as those of Mr. Wetmore and Mr. Pohndorff and that they can get a better and cheaper article.

THE PRESIDENT.—I now call on Mr. Wetmore to state the programme that will be followed by this Convention. There will be three committees appointed, one a contingent committee as I have already intimated, a committee on resolutions which I hope won't be used, but for a case of necessity there will be one appointed. There will also be a committee on wine exhibits and one on raisin exhibits. As the chair does not know what wine growers or raisin makers will be in town, or are in town at this moment, and as we wish to make this committee as effective as possible, the appointment of this committee will be delayed until to-morrow when we will know who are here. You will be notified of the selections to-morrow.

MR. C. A. WETMORE.

To-morrow afternoon the raisin question will be discussed by those conversent with it. We do not know who will be here, but Mr. Coleman, Mr. Lusk, Mr. Johnson and Mr. White, I think, will probably be in attendance. The raisin men are doing a great deal all over the country, and there are many practical questions to be considered. I hope the wine men will take interest in them, as they are all, more or less, in one sense in the same line of business.

On Wednesday the experiences of practical wine makers in fermentation during the vintage of 1885, will be considered, and the influence of the selection of the grape in making good wine, the difficulties that are encountered and the means of overcoming them, or suggestions that may be made as to the methods of overcoming the difficulty will be discussed by practical men. Mr. Crabb is expected to be here. There will also be the result of experiments performed in connection with the Commission on last year's vintage.

On Thursday, Professor Rising, the State analyst, who has made analyses of quite a number of wines, some imported and some native, will make a report. He has also during the past year investigated the use of arsenic against grass hoppers and will make a report on that subject. During that day we will try to have the microscope here to illustrate the various forms of fungoid germs found in the wine, called ferment. Not only the alchoholic ferments in all its forms, but other and false ferments, may be shown by the microscope and so determine what is the matter with the wine. On the same day we shall probably hear from Professor Hilgard, of the University, and if there is time on the same day, a report from our own office as to the experiments conducted here and in the country.

On Friday, the plan is to take up the question of National and State Legislation, which occupies our thoughts a great deal at the present time. We will probably have to give a little more than an hour on Friday afternoon to that subject, because there is a great deal to think about. The people are with us all the time, and the only trouble is there has been no work done in the past, but by careful discussion of this question I think it can be made apparent that with organization we can accomplish much, for the people want us to do this. There is the question of local option laws and prohibition laws throughout the East. They are agitating legislation which has to be considered more or less, as it is hurting us. As Mr. Pohndorff said to-night, you can buy whisky where you can't buy wine. Prohibition does not prohibit whisky, but it does prohibit wine. Wine is too bulky to be packed around, and the local option movement is really helping whisky. In Maine, where they have the prohibition law, I have been informed by a gentleman that he can count more drunkards passing his office in Portland, Maine, than he could before the law was passed. I hear the same thing in Kansas and Iowa. And our interest is the one that is hurt first. You cannot carry barrels of wine around surreptitiously, but whisky can be carried in all sorts of packages, and you can get it anywhere, or do as they do in the hotels, when you want a drink of whisky they send you up to the bed-room and let you drink it there. We must think it over, for it is a misguided effort. The vilest rot-gut in the world is now being sold in prohibition centers, but it is under suppression, and no man has a right to complain of a drink that is sold against law. They are doing the country a great deal of harm. Virginia has just passed a local option law. Canada, half of it, is under control of local option. Kansas is under control, and Iowa is under control of the prohibitionists. In other words, the country is getting under the controll of cranks, and it is for the very reason that people do not do anything except in the line of trade, and trade, when it gets down to the question of retailing, is often something that is not very commendable, and that we do not like to stand up for. I am certain that, as I have seen trade in the East, the saloon and the retailer working, it is not a very respectable

business. There is such a thing as a responsible class among them, but the cheats that are carried on through the retailer are something abominable. I hardly realized how it was until I went to look into it in the careful and prohibition States in the East. Their efforts are against us. The other is a legitimate business of course, and they are entitled to have their liberty. They do not help us one particle to suppress these nefarious practices. Why? I suppose they are losing a part of their thunder. They do not join with us in any of our efforts. I am talking about the organizations, the fighting militant prohibitionists. Of course there are men in Congress and elsewhere who have a warm feeling for us, and they are willing to go as far as they can to secure a reform by helping the people to suppress all forms of adulteration.

When an attack is made on our interests it is resisted by whom? Only men in the trade; producers are doing nothing—no organized work is done anywhere. Something should be done, because we are being stabbed in the back everywhere and our industry is being hurt more than ever. We have to attack from the standpoint of personal interest sometimes.

On Saturday, congate to this same subject, it has been considered best to take up the topics of prospective vintages and markets and consideration of trade, how to enlarge it, and what obstacles are in the way. A subject that we have had up before in our Conventions and always discussed it, but which we each year discuss more intelligently. If we carry out our plan during the week we will try to get hotel men, restaurant managers and retailers of wine to meet with us. They really can do more for us than all the Conventions that meet here. If the hotel and the restaurant men in the country would sell wine at the same rate of profit as they sell beer, they will have accomplished a great reform. And if they can accomplish this, and they won't do it, we must try to find a way to make them do it. For it is an extortion that they extract out of the wine drinker by making him pay a larger profit than they do the others. If we use a little skill in our work and combine our forces, I think we can accomplish something. These gentlemen, such as I have mentioned, are interested in the business, and they can do something for the public.

The Convention was then adjourned until Tuesday Morning at 10 o'clock.

SECOND DAY.

Tuesday, March 16, 1886,

During the day the President appointed the following Committee:—The Committee on Wines, F. Pohndorff, E. C. Priber, St. Helena; C. H. Shillaber, Cordelia; J. D. B. Stillman, Lugonia; J. A. Stewart, Santa Clara; N. Wyckoff, Woodland; J. H. Drummond, Glen Ellen; R. T. Pierce, Santa Clara; George Bernard, Livermore; I. Landsberger, San Francisco; C. Palmtag, Hollister; W. B. West, Stockton; E. H. Rixford, Woodside, San Mateo Co.; E. B. Smith, Martinez; Wm. Caldwell, Cloverdale; Capt. J. Chamon de St Hubert, San Francisco.

AFTERNOON SESSION.

This day the discussion appointed for the afternoon session was postponed, Mr. Wetmore announcing that the gentlemen who expected had not arrived, and therefore the consideration of the raisin culture would be put off until the evening.

EVENING SESSION.

President Haraszthy called the Convention to order and said:

To-night is especially set apart for discussion by the raisin growers, concerning the finest quality, and the best methods of making raisins, including the manner of pruning if necessary, style of boxes and relativ emerits between the different styles of producing the same thing. I shall first call upon Colonel Bramhall, who represents the raisinn iterests of W. T. Coleman & Co., and then upon Mr. Isidor Jacobs, the representative of Lusk & Co.; then I shall call for a report from Mr. Byron Jackson, the Chairman of the Raisin Committee. After that I hope that all interested in raisin culture will then come forward and ask questions or make suggestions.

COLONEL BRAMHALL.

Mr. President, Ladies and Gentlemen:—Mr. Johnson was to have had the pleasure of addressing you this evening on this question, but he is unavoidably detained at home by a very severe cold, very much to his regret, and equally to mine, for I am sent here to speak on his behalf.

The question of raisins is one that is of very great present and prospective interest and importance to the State of California. It is so, by reason more of the great capabilities in the way of raisin production, than because of the amount of product up to this time; as you are all doubtless aware, this product has lately undergone a large increase, the last crop having been not less than twice the size of any previous crop, but still at its present proportions, the large production of California in raisins barely reaches one-tenth of the amount consumed in the United States annually, and which have heretofore been almost exclusively imported raisins

The introduction of raisins from California into the East has necessarily been very slow and gradual. It started at first upon the Coast, and gradually worked its way towards the East, making headway, as the

people became familiar with the goods and acquainted with their merits, and as they overcame their prejudices, which still exist in the minds of many in the far East, in favor of the imported product over the domestic. And whilst I call this prejudice, it is not wholly so. The preference in favor of the foreign raisin is, in a measure, well founded. It is to be expected that an industry that has existed for generations in the old countries, and has the benefit of experience which accrues with time, would necessarily have reached in all branches and all departments of the work, a perfection which we, as beginners in this country, can scarcely hope to attain, except with greater experience than we have had. But with the progressive character of the American people, it is fair to infer that we shall make such progress in a short time, that we will stand on an equality with the Spaniards in regard to the quality of raisins. We encounter the greatest difficulty—and when I say we, I speak on behalf of the raisin dealers—in introducing raisins into the far East, where we come into competition with the imported article, and it has been with great gratification that we have observed, particularly within the last two seasons, that the Eastern markets are gradually opening to California raisins. It was a providential thing, because the Coast and the far Western and the South Western States were inadequate to take up our entire product. We have only been enabled to introduce California raisins into the far East, into the markets that are critical, where commodities are bought and sold strictly upon their merits, because California raisins have been steadily improving in quality; not necessarily in the inherent quality of the grape itself, but there has been great improvement in the process doubtless of cultivation first, but certainly in curing, then grading, and then of packing. I know that you gentlemen who represent the practical raisin interests as growers, after learning that there is a market for you and that it is practically unlimited, because your production will not increase with the ratio of the increased consumption in the East, saying nothing of the vast quantity now consumed of imported raisins, know that the most important things for you are questions pertinent to the curing and preparation of the raisins for the market. This matter of curing is a thing that cannot be told, it cannot be taught in books, it cannot be written down, except in a general and a vague way. It is a thing that must be learned by experience. We have not here the benefit of several prior generations of experience from which to draw the lesson which the Spanish raisin maker takes in almost with his mother's milk. We are dependent upon such ingenuity and fertility of resources as we have, and as occasion may furnish. Therefore, for every individual about to engage in the business, the best injunction in regard to this matter of curing raisins is, that they shall place themselves under the practical direction of those who have had experience before them, learn what can be learned from those, and then trust to their own readiness of the senses, and particularly to the readiness of the sense of touch.

After curing, which is not relatively but virtually the vital thing of the whole business, the matter of grading is next in importance. The reason of its importance is, that the consumer of the raisin will invariably judge them first by their appearance, and their appearance will be affected by their grading, and it has been almost a reproach to the California raisins, that the reason that they have been so long in getting into the market is because that in the early stages of the business there was a lack of knowledge of proper grading and carelessness of method, of slovenliness, partly arising from lack of experience, and partly from absence of business training. All that is being remedied, but it behooves those in the business to study the manner of grading and details of curing.

There is a disposition on the part of many to grade too fine. I have seen for example from some ranches eight different grades of Muscatel raisins. That is more than there is any necessity for, or that it is profitable to make. As a general proposition, the grading will yield here very much as it does in Spain; about two classes, one of bunch raisins which may be London Layer, or Layer, according to its quality, and another class of loose. There may be others, but these two will answer for the ordinary product of California vineyards. There should be at least two grades of each of these classes, separating the better from the inferior, and packing them by themselves. They will bring prices, by reason of this classification, much higher than if the two grades are left together; in fact the effect of leaving a high grade and a low grade of raisins together in one package is to bring down the price of the package to that of the low grade. This is a matter, however, which depends on experience and acuteness of one's personal observation.

After this comes the important matter of packing. There is a special style of packing which is known as the California style, it is the *close* style, the face of which is exposed on the opening of the box. The box is ordinarily required to be close packed, that there be no crevices, no interstices, no stems to be seen. Now, the packers in Spain exhibit the stem, for the purpose of showing that they are bunch raisins, as the bunch raisins are more desirable than the loose raisins, but the loose raisins are perhaps the most profitable. Some of the California stems are larger than in the corresponding grades of Spanish raisins, and for that reason, with our dry climate, it is very apt to over-dry both the stem and

the raisins, and to shrivel up all the fruit on the bunch. It was early thought by packers to conceal these defects, to entirely cover the face of the box so that there should be nothing presented but a mass of clear fruit, perfectly level on the surface. In the matter of the thickness of stem, I do not know that there ever will be any change (probably that is a matter of soil and climate, I am not competent to speak on that point) but in the matter of the dry condition of the raisin, which induces the shelling off from the stem, that is to a large extent under the control of the grower or drier, and there comes in the value of trained experience in watching the grape as it cures, and taking it up from the board at its proper time. Furthermore, the handling of it in the sweat box is to be considered. The sweat box in reality, although it is considered by some to be a necessary part of the curing, is probably nothing more than the means (most effectively yet known) of *egualizing the moisture* not only of one raisin to another on portions of a bunch, but with every bunch to the other bunches, the idea being to produce absolute equality of moisture of the entire fruit that is contained in one package.

If information is wanted on any points relating to packing or handling for the trade, I shall be very happy to answer all questions that may be asked. I am not a practical packer myself, but I have had occasion to overlook it for many years, and to look at it entirely from a standpoint of trade.

There is a point that I have overlooked. The crop of last year was known to be larger than any year in California, and up to a certain time it was contemplated that we should have the finest as well as the largest crop, but it is an open secret that the grapes fell short in point of quality to some previous seasons. Some of you who live in the raisin districts know this was from the fact of the very hot weater that prevailed during the greater part of the drying season, which materially interfered with the quality of the fruit. The result was that a large proportion of the raisins over-dried and were inferior in quality, but on the other hand there have been raisins which were sold in the Eastern markets, Boston, New York, Philadelphia and elsewhere, at the same prices that have been paid for Spanish raisins. That should be a cause of congratulation, for it demonstrates the possibility of California becoming the center of production for the United States.

The President.—I would like to ask you if there is any recognized quality outside of mere appearance, outside of mere packing, from the taste, not only from the look, if there is any distinction recognized in commercial circles.

Mr. Bramhall.—Yes, but that varies very materially with localities. For example, California is generally known, but the taste of American raisins is almost unknown in the East, and there is very little distinction if they are of full flavor and meaty. Next, therefore, to quality, the question of flavor determines the matter.

The President.—Other things being equal, would you recommend packing according to appearance in preference to flavor? I ask this question for I notice many good ladies in our grocery stores on many occasions pick out boxes without choosing, I think, the largest raisins, and I thought that that showed something in the flavor that was better than size. What price they paid for them I cannot tell, but it evidently showed a preference for the smaller article.

Mr. Bramhall.—That would be natural if there was a difference in the two raisins, one of good flavor and one of brackish flavor. Other things being equal, it would be a matter of consideration in the size of the raisin. There is on exhibition here a very fancy box of raisins that is brought from Spain. It is a style of box that sells for a high price in New York City for a short time during the holiday season. The goods that are in it are no better than many that went out of California this season, but it pleases the eye.

The President.—You see we are working to a disadvantage. If our raisins are as pleasing as the others in appearance, then if the fruit be as good in quality, the question is what is a new beginner to look for; is he to aim for size, or is it packing, or to make a raisin that will be more pulpy, or fruitier, or of finer flavor, and sacrifice size and appearance? They might recognize such a raisin as that.

Mr. Bramhall.—Probably in the lifetime of myself it will be a sound commercial principle for the grower to look to size and color rather than flavor, but if he can combine those qualities it will be better. I do not suppose he can control the matter of flavor at all—I do not know anything about viticulture and do not pretend to speak upon that subject, but it is a certain thing that a small raisin, however superior in quality, will not sell as readily as a larger raisin of inferior quality. There are others that prefer flavor, but take for instance the Sultana raisin. A majority of consumers will not touch it at all except at a greatly reduced price. They prefer the Muscatel raisin. We have had that demonstrated this year. There were raisins of a very fine quality made in California; we shipped them East and some of them probably, sold as high as eight and a quarter cents delivered at Eastern points, but those were exceptions. You may have noticed some of the raisins that were made this season, Mr. Wetmore undoubtedly has, and a great many of them were over-dried. They rattled like peas.

Mr. Wetmore.—Yes, they were very insipid.

Mr. Bramhall.—Yes, they were almost devoid of flavor. There is none of that jelly in it that there should be. In the minds of some people it is thought that all the moisture is dried up. This is candied; it is not a raisin at all. The raisin is a grape dried to such a point that the jelly is retained in it. If it goes beyond that point, you have taken some of the jelly or pectine, and for that matter you might as well dry a Malvoisie or any of the other ordinary grapes in lieu of the Muscat.

Mr. Wetmore.—Have you not observed in those insipid ones that there is a lack of sugar.

Mr. Bramhall.—Certainly there is a lack of sugar.

Mr. Wetmore.—Does not that point to the remedy in the case? In wine making we notice that in certain varieties of grapes we do not get much sugar, and I notice that the raisin makers are trying to get the greatest possible grape regardless of the quality of the fruit.

Mr. Bramhall.—I think that is the object, to get the greatest possible fruit, and if, as you tell me, it is dangerous to the saccharine in the grape to increase it to an abnormal size, I think the remedy is a very easy one. In Spain they limit the production there.

The President.—The tendency of my question is for the benefit of beginners to ascertain for them what they should plant, what will yield them the most money, the large size or quality. It would be hardly fair to compare the Seedless Sultana with the raisins for it is much more of a currant than it is a raisin—it is a grape of course. With Muscatel of even ordinary size, the appearance of the fruit varies. If you compare the foreign and domestic raisins of a certain given size, the difference is very small. There is a box there that appears to be of a very large size but when you examine it it is very little larger than the others. Now which is the most desirable raisin, the dark blue colored raisin or the very light one?

Mr. Bramhall.—That is a matter of taste, just as it is which is preferable, the sun or the dryer dried raisin. There is no preponderance of grade yet.

The President.—But which is the more preferred of the foreign raisins?

Mr. Bramhall.—We have to deal with this country. We have no possibility of export yet.

The President.—But if we are in competition with the Spanish raisin, that I suppose must be our guide.

Mr. Bramhall.—Yes, but as yet we are not sending many to points where we are in competition with them. Both the purple and red are equally favored. I see Dehesias here that have a very pronounced reddish hue, and the raisins from the northern counties have a fine lightish tint. Both those raisins have been sold in the Eastern market side by side at the same price. It is the American people that we have to deal with now and it is a question whether it is not likely to be so for some time to come. I suppose that in wines you find there is not the same distinction here that there is in a foreign country; I suppose that our palates are cooler yet.

The President.—The raisins from Spain have been here for a good many years and it seems to me that will govern the market and will guide the purchasers in their preference for one or the other.

Mr. Bramhall.—That seems to have but little to do with it. As to the matter of flavor and size of the raisin, it cannot be determined by the individual as to what it will be in advance. I do not pretend to know much about that, but I presume it depends on the condition of the soil and climate. Is not this so?

The President.—Yes, to some extent, but still there might be more control exercised in it perhaps. For instance in some localities a person can turn on water or not just as suits himself. Now if he does he can make a larger raisin and have a larger crop, and if he has only to think of size and the amount of crop of course he will turn on the water; if he wants on the contrary a raisin somewhat smaller but of a better flavor, and gets a higher price for quality, he need not have so many bunches on his vine. He would be guided by the influence of production. I am talking of where a person can or cannot irrigate. I am not speaking of the season. I do not say anything of irrigation in the winter, but irrigating out of season. We find in parts of this State irrigating in the month of July.

Mr. Bramhall.—I should certainly advise all contemplating going into the business to give special heed first to the matter of size. I think that will be of the most importance to them for some time to come. Other generations that are more highly educated than we may make a distinction of quality and flavor. But there is not difference enough of flavor between the different raisins to justify a very great distinction on that score; there is of course some distinction.

The President.—I think you will find boxes on the table that are remarkably distinct.

Mr. Bramhall.—They may represent the two extremes; the fullest flavor and the most insipid, that is possible. But I mean taking them as a class. That is not determined necessarily by locality.

The President.—Are there any questions that any gentleman would ask of Colonel Bramhall before he leaves us? This is a very important subject and a very interesting one; I should like to see the raisin makers have half the interest in their business that the wine man has in his.

Mr. Landsberger.—I would like to know whether a large grape grown by being

forced by irrigation will, when ripe, make a large raisin. I very much doubt it.

Mr. Bramhall. — Not necessarily; the moisture may dry out a great deal.

Mr. Landsberger.—I think that a grape may grow larger by reason of being irrigated, but that such a grape will make a smaller raisin than a tolerably fair sized grape that is not grown by irrigation. The water passes to the grape and will all dry out when it is dried into a raisin. I think that a raisin made from a grape not grown by irrigation will make a better fruit and better raisin, will be more fruity, will have more flesh and less skin than a big sized looking raisin which has been aided by irrigation. I have had a very short experience in raising making but in that time I have tried the two together on a very small scale, but that has been my experience, that a very large sized looking grape, grown where it had the benefit of water, growing near a creek where it was irrigated, when dried, made a much smaller raisin than a smaller grape farther away from the creek which did not have the benefit of moisture; it was not artificial irrigation in this instance, but the one grown without the moisture made a much superior fruit. You understand, however, that my experience has only been that of a couple of months and I would like to learn something here from persons of experience whether that was an individual case.

Mr: Bramhall.—That is in conformity to the rule. For example, a gentleman who has had some very fine raisins and made them without irrigation said that the average loss in drying was about two and three-quarters to one, whereas it is not proper to calculate less than four to one for the irrigated grape. That is a great gain for the non-irrigated grape. As to flavor there is no doubt that the non-irrigated grape makes as good a raisin as any in the State.

Mr. Byron Jackson.—You are in a position to judge.

Mr. Bramhall.—I might add that they make very much better.

Mr. Jackson.—Are there any really distinct neighborhoods recognized as raisin neighoorhoods that do not irrigate ?

Mr. Bramhall.—I am told there is, in the El Cajon Valley. I am told that there is no irrigation there at all; they have no irrigating system there.

Mr. Jaekson.—Do you know how far they are from mountain streams?

Mr. Bramhall.—There are vineyards which are midway between two ranges of hills, which I should think were from three to six miles apart.

Mr. Wetmore.—They are located in different parts of a valley containing 15,000 acres of level land.

Mr. Jackson.—I have understood that their vineyards were along the hills from which they secured a supply of water.

Mr. Bramhall.—I heard from the owner of a raisin ranch at Fresno that he was making preparations to under-drain his vineyard. He considered that in his part of the country they have more than water enough in the soil and he will not only abandon irrigation but he will drain.

Mr. Jackson.—Our vineyard is now about five years old. I think we have flooded it twice, and we never do it except in winter, or at this season of the year, and never do it without expecting a dry year, or not having had a sufficiency of rain up to this date. Last year for the sake of testing we irrigated a small plot, and that plot was unquestionably better than those that were not irrigated. Then my neighbor, Mrs. Briggs, had one locality that was irrigated. I know they had to flood it in order to plow it. I was a little later than this, but it was the finest grape, and at the risk of being considered a little sectional, I am of the opinion that she has as good a sample as any grapes that are on the table. I am also of opinion that this locality could not raise grapes without irrigation. I have heard the remarks in regard to size, and I have a good opinion of it, that possibly large grapes may not be as good as smaller ones, but the great thing to be reached is to give a uniform size; I believe that is the most important thing to be considered, together with some way of preventing our vines from constantly producing what we call the second crop, but it might safely be said a late grape, for it commences early and continues constantly, with a period of at least two months ripening. If there is something that can be done to prevent that I would like to know it. This year we had them frosted, and after the rains came we still had a large crop we could not use, so we sold them for enough at the winery to pay for their picking, If they had had two weeks more for ripening they would have been of some account. If there is some remedy for that second crop, and the selection of some uniform size, I think we shall have made considerable progress.

The President.—There seems to be some difference as to what is meant by irrigation, as to whether it is during the time it rains or in the summer. As a general principle I believe irrigation means after the rains have stopped. Now if you are flooding in this month while we are naturally expecting rains, I would hardly call that irrigation.

Mr. Jackson.—I do not believe it is in the sense of irrigation.

The President.—There is a great confusion and it might mislead people in their opinion. There might be no objection to flooding your vineyards at any time when the rain is likely to occur, or when the rain ought to come, because the vines are in such a state that they are ready to receive the moisture, and therefore it changes the whole action of nature.

Mr. Jackson.—In the sense of irrigation, I do not believe that what I am doing is irrigation; but I believe there are thousands that could not do without it.

The President.—In summer months when the rainy season is over.

Mr. Jackson.—Yes. As I understand it in some places there are places that could not go through the season without irrigating. But there is a difference between vines growing by the stream or away from the stream. I know you can get too much water. I know it from observation, that our neighborhood can get too much water.

The President.—That is the point I am getting at.

Mr. Jackson.—The point you are getting at is whether you are going to make a large raisin by forcing its growth. I do not believe that those who are most in favor of irrigating will claim that, for you continue the growth by water at the time grapes are maturing. But still if we do not have a good healthy vine, we will have a raisin that will all dry up, there will be no meat in it; I think it is the better way of saying that it is all water. There will be no meat or saccharine. But you want good fruit to make good raisins. We have had grapes that looked well, but, for want of sufficient growth, they did not have body enough to make good raisins.

The President,—Could that not occur in this way, that the vineyard had been irrigated before? I am in a district altogether hills, and we had a better grape last year than any before. Of course we fertilized the vines, but it was very dry: we had to go down 120 feet for water and dig about a dozen wells, and could then hardly get water enough for the cattle, but the grapes were as large, or larger than they had ever been before, but there was no means of putting water on them, all they wanted was proper nourishment.

Mr. Jackson.—Yours is on the hill-side.

The President.—Yes; it seems to me it would work the other way, the higher you go; we have a temperature there sometime at 6 o'clock in the morning of 96 and 98 degrees. It gets pretty high in those hills.

Mr. Jackson.—I notice you must have water enough to make a good raisin.

The President.—I think the analysis will show more acid in the grapes that are irrigated with the same amount of saccharine than the saccahrometer will show in grapes containing the same amount of saccharine that have not been irrigated. The one will be more apparent than the other, the more acid there is in it.

Mr. Jackson.—If it is wet enough in winter a man may have good grapes, I will admit that. But I have been in localities where they could not grow vines without irrigation.

The President.—The question again arises, what you mean by irrigation, in the summer or winter?

Mr. Jackson.—I mean during six weeks or two months in the summer as they do in Fresno.

Mr. Wetmore.—Mr. McPherson does not irrigate for grapes in summer.

Mr. Jackson.—I am surprised at that statement, for I have been at Mr. McPherson's place and water was running all around it.

Mr. Wetmore.—That is what he stated last year. He irrigates in winter, but says he would not irrigate in summer.

Mr. Jackson.—I do not know how late they have to continue it, but I know they have to irrigate, and I am satisfied with irrigating. If it is used judiciously, the same as rain, it will do no harm, but you must put in so much and no more of it; it certainly cannot then injure anything, and I believe it is a question of intelligent culture, both in pruning and irrigating. We must have enough rain and not too much. I do not believe that a poorly grown vine without moisture will produce a nice grape, and although I do not pretend to be a practical man, I do not reside on the farm. I believe that nothing can be grown if it is small, as well as if it is well grown. As to the matter of over-grown fruit, I would say that I think we want uniform size, because if we get good size that helps us out by getting into the right place. In our vineyard we adopt the method of inspecting the size when we pick them, putting the best into one tray, and those that were partially burned or dried into another. It was a great advantage in the curing, as they would cure equally. The young men who were picking them got quite skillful, and could drop them readily into the right trays. At first we thought we lost time, but we soon found we did not. If any method can be devised, without injuring the vine, to stop the seoond, third or fourth growth, it will be a great advantage.

The President.—The size is regulated in Malaga by the scissors.

Mr. Jackson.—When it is grown?

The President.—No, but when they put them on the drying trays, they go over and select the bunches, and those that are dried they make wine of. The way the Malaga wine is made is out of those remnants; it is not made any other way.

Mr. Jackson.—At present we are not making any raisin wine that can find any market, for it is a hard matter to realize any profit at the price we have to pay in hiring men to do this work. We find in real estate circulars the large profits that can be made, $200 an acre, but when one comes down to work he finds that it costs $100 at least to get the facilities, to get the dryers and other appliacnes. It takes one tray to the vine, so that it costs $50 an acre for trays. Then I know it is hardly safe to make raisins in this country without some sort of an artificial dryer to help you out when the rain comes, and to do that you

want about another $50, that is $100 an acre. And it is a very difficult matter to hire laborers and make any kind of profit after it has cost so much, unless you are a practical man yonrself, for we have had men that do not even know that raisins were made out of grapes. You have to watch every motion from the picking and sorting until it is safely in the boxes, and I tell you it is a very hard job to find any profit when they have got into the boxes. I am satisfied with the prices, that is big enough. The other part of the profit will come in this matter that has just been suggested, of quantity. I heard Mr. Wetmore push Mr. Bramhall on the quality question. I think if we were going simply for quality it would take some of our very best tasters to decide whether the grapes were from the north or south, although they might be able to tell that, but I think they would have a difference of opinion in the very fine quality of grapes that were grown on the hillsides, and only half a ton to the acre. I think if my crop did not yield more than three or four tons to the acre, I would put a little water on it and go for size and take the chances of getting good fruit. I think if they use water judiciously it would make a better return. I receive letters from different parts of the State as to irrigation. I got one from San Bernardino; the gentleman says he owns water stock. I don't remember what the cost was, but he said the only trouble was that he could only get it for a few days or at intervals; those intervals did not suit his circumstances so he had to take it when he did not want it, and when he did want it he could not get it; it was therefore a very anxious time with him. I would rather go into the valley where I could get five or six tons to the acre, than confine myself to quality. I will take the chances of selling it after I have put the water on it, and I will let them know it too.

Mr. Isidore Jacobs.

Mr. President and Gentlemen of the Convention :—The remarks I have to make I trust will be interesting to vine growers of the State, in speaking of the methods of packing, the curing, the branding, the most advantageous markets and the prices obtainable for the product. I believe these are the most important points. A great deal of improvement has been noticeable in the quality of raisins sent out of the State in the season just coming to a close, and a great many dealers at the East, who have heretofore been unwilling to admit that there was any comparison between our product and the foreign one, now acknowledge their error, and some of them go so far as to admit that they have seen and sampled California raisins which are in every way as good as the imported. This, I believe, however, was only the fact in exceptional cases, as the bulk of our raisins are not yet equal to the best imported, as evidenced by the difference in price at the East. We need more experience in packing and curiug. In other words the imported raisins have a different color and are found to be more tender and juicy than ours. The color is a sort of deep red, while the bulk of our raisins on the other hand are very dark, and in many instances hard and tough, instead of being tender and juicy. A raisin to be thoroughly palatable should not be too moist or too dry, but must be cured exactly sufficiently to ensure its keeping qualities. This has been one of the leading grounds of complaint against our raisins for the past few years, as it was commonly stated in distributing points in the East that they were not nearly as tender and that the seeds were harder and larger than the foreign product. This complaint seemed to be, to those conversant with the fruit, well founded, but it has been demonstrated that the whole fault was in our curing. An Eastern dealer claimed in former years, that you might place a box of imported and a box of domestic raisins alongside of each other, and, blindfolded, he would tell them apart, merely by touching them. He could detect the tender (imported) and the hard (Cala.) To those who have made a study of the business in the past, this can readily be believed, but I think with the experience of the past and that of the future, this serious defect will be easily remedied.

Regarding the branding of the boxes, the best styles of packing for the Eastern market are the London Layers and Loose Muscatels. It has been demonstrated during the past season that good loose Mnscatels have brought better prices than Layers. It therefore does not pay growers to put up any other than the two brands mentioned before. It may be a good idea to pack a few Dehesia Clusters, Imperial Cabinets, and like extra brands, but it is a question whether it is good policy, because, by packing such extra brands, a grower is very likely to deteriorate the quality of his London Layers. The London Layers and Loose Muscatels packed should be all selected and choice. We have seen a great many loose which were very choice, but also a great many that were not graded carefully enough, containing many very small and hard ones. Great care must be taken in the grading, especially in the Loose Muscatels, as a great many of the choice loose raisins were placed in the Eastern markets at nearly as high a price as the London Layers. In fact, for the first two months of the season, loose raisins sold within fifteen cents per box of what the choice London Layers were bringing. I would suggest that it is very much more advantageous to growers to have their product go out in an attractive form with a handsome lithographic label, bearing their own brand and name, than under a general brand that they do not own, as by conscientious packing and grading they will make

their own name and brand a trademark and advertisement, which in course of time will be of great value to them, besides the time will come when buyers will discriminate according to brand and name.

The most advantageous markets for our products appear, at present, to be in the Western States, which is quite natural, as the freight on foreign raisins from New York to these points operates in our favor. Wherever the better brands of our raisins have gone they have given excellent satisfaction. The past season has been an eventful one in the history of the raisin industry. They have gone to markets where they never were before. They have been extensively purchased by mercantile houses, which, in previous years, would use nothing but the foreign product. A great many people claim that the cause of this is on account of the rapid stride made in the improvement of the quality and packing. While to a certain extent this did have an effect in pushing the goods, yet the cholera scare, as it was called in the East, also had a great deal to do with the introduction of our goods into new markets and the prices received in the early part of the season. This can be demonstrated by the fact that for the bulk of shipments made to the East and West in the months of September, October and November, Cala London Layers of good average quality sold readily at from $2.45 to $2.55 delivered while the average grade of the foreign sold from $2.85 to $2.95, or, on an average, a difference of from forty to fifty cents per box, in favor of the foreign product; but as the foreign raisins contain 22 lbs. net, and ours only 20 lbs. net, the difference was in reality only twenty cents per box in those months. Since the turn of the year, however. the difference in price between the foreign and domestic product became much larger in the Eastern markets, for, while the foreign product, at the present time still remains firm at New York at about the same prices ($2.85 to $2.95), Cala London Layers of good average quality have declined to about $1.90 to $2.05, or a difference in price between the foreign and domestic, since the turn of the year, of sixty-five cents per box, against twenty-five cents per box in the early part of the season. When it is taken into consideration that, the keeping qualities of our raisins are fully as good as those of the imported, it seems rather strange that there should be such a change in the relative difference in prices.

It may be answered that the break in freight rates is the cause, but why in such a staple as raisins, when there are millions of boxes imported annually should the freight make such a difference, besides if the quality remains the same, why do not the imported raisins decline in the same proportion ? I think, having just returned from the East, and having thoroughly canvassed the raisin situation, that the cause of the difference now existing in price between the foreign and domestic product is not to be attributed to the reduction in freight rates which has only been going on less than three weeks, but it should be attributed to the large quantities of inferior raisins sent from here in the last ninety days. Last fall when the heavy rains came, a great many raisins in various stages of curing were seriously damaged. The raisins were packed and branded London Layers and Loose Muscatels and were dumped indiscriminately on the various Eastern markets, put at auction, and, by forced sales, helped to generally demoralize the Cala product, as the choice Cala raisins on hand at the East, when this occurred, naturally suffered from the general demoralization in prices and quality. I think this must have been the cause, as the foreign product has remained firm, in the face of a continuously falling market in the domestic article. It is very much to be deplored that this state of affairs exists, but it remains with the growers themselves to see that such a thing does not occur in the future, as it will only tend to place us again in the same position, as previous to this season.

Nothing but the very best goods should be sent East under the brands of London Layers and Loose Muscatels, especially to the New York and Boston markets, and the remedy remains with the growers themselves, who, by establishing their own name and brand, by the excellency of their product, by conscientious and careful grading will not only foster this great and growing industry, but will reap the reward of their labors in the near future, when the raisin industry becomes, as it inevitably will, one of the leading interests in our State.

The President.—You saw with what persistency I asked certain questions of Colonel Bramhall as to size and quality, The Colonel gave us his opinion as far as his experience goes. I would like to have your opinion on the same question.

Mr. Jacobs.—My opinion is that a great many raisins have been made on this coast which will rank with the best samples of Malaga for flavor and size. The only trouble is that a great many of the growers don't take the same care, in fact that has been as much against the introduction of the raisins as any other. The raisins of Malaga are all carefully put in boxes and many of them are pressed with the thumb and finger, pressed right out. The average run during the past season, as Mr. Jackson said, of course I believe this was an exceptional season, and the raisins in Woodland were extraordinarily fine, but I have seen through the average run of raisins which, if selected and the small ones taken out, would rank with those of Malaga, provided the same care was taken of them. I do not think that some of those on the table are an unusual size for raisins when selected, bu

a great deal depends upon the manner in which they are packed.

The President.—What I wish to get at for beginners is which are preferable, the size that is smaller with care in the picking and packing, or the size that is larger with the same care, but has less quality, less flavor, less pulpy, less meaty ?

Mr. Jacobs.—I think the dealers of raisins throughout the European markets cannot yet discriminate between the flavor of California raisins, and therefore I think that raisins that are packed of a uniform size and a good size will sell the best. Of course everything lies with the grading ; they should be graded properly and uniformly.

The President.—Do you think their discrimination of the foreign raisin is greater than that of the California raisin ?

Mr. Jacobs.—Their discrimination with the foreign raisins is to this extent, they discriminate according to price. The foreign raisins have been handled by them extensively for many years. In the large wholesale groceries they keep men for the purpose of looking after the raisin department and they hardly do anything else and these men select the fruit. Now with the California raisin the largest raisin and the most uniformly packed will sell for the best price. This has been our experience for the last few years.

The President.—Do you not think that an unhealthy state of affairs ? I call it a dangerously unhealthy state of affairs where looks dominate over quality.

Mr. Jacobs.—Nevertheless I think it is so, for it pervades almost everything, not only the raisin business, but almost everything that is used. This is a commodity that the people select greatly according to the looks. If a thing looks well they prefer it to something that does not look as well ; thus a small raisin may be of a better flavor and yet they will not purchase it as readily —that is, the dealers will not purchase it as readily as a larger raisin ; the larger would fetch as much even as fifty cents more for London Layers of good size than if the raisins were small.

The President.—That takes us back home to the good wife ; when she begins to use them or they are put on the table for dessert do not you think she would soon gain some little experience and that some lots would go back to the grocer with the remark that "They were very fine looking raisins, but they had no more taste about them than dried chips ?" Don't you think she would gain some experience and have a choice for the raisins which had not been put up in the boxes for their looks but for their quality ?

Mr. Jacobs.—I think that is so, but the question then arises whether there is such a difference in California raisins.

The President.—All you have to do is to ook at the boxes on the table.

Mr. Jacobs.—There is a difference in the flavor and some of them are much more meaty than others, yet, I do not think there is difference enough in flavor to discriminate between them. I do not think that if all those raisins were all packed with an equal grade that the difference in flavor would be such as to make any difference in the market at all. I do not think that the dealer would make any distinction in the purchasing of them provided they were all of about one size. Probably not one buyer in fifty ever notes a raisin for its flavor. He looks at them and is governed by their appearance and not taste.

The President.—He might take them home and then feel disappointed and never wish to buy those again.

Mr. Jacobs.—That is so, still he may take a sample box sent from here to the east and go to Boston, St. Louis, Kansas and other cities and probably during all that time the same broker may sell 25,000 boxes of an equal grade of raisins and not a raisin in that box be touched. I have seen the same box after it has traveled around three weeks.

The President.—I would like to know what the fact is; of course you are giving your experience of what you know. Now we would like to know, for the increase in consumption should depend solely on the satisfaction it gives to the consumer, how we are going to satisfy their requirements. The question is whether a better flavor would not determine the amount used. If your experience only goes as far as the merchant is concerned that is only the first sale, it is not the consumers sale; it is getting the goods off of the manufacturers hands into the merchants hands, but very often when you have got them into the merchants hands or the jobbers hands you have to run all over the country for customers. The question now is how does it affect the consumer.

Mr. Jacobs.—I should think the same rule will work with imported raisins; there are two to three million boxes, and there is no discrimination in imported raisins as to flavor. There is none whatsoever and still there is a difference, just as much difference in the imported raisins raised in the different districts as there is in California raisins raised in different districts; but there never has been such a distinction known in the eastern markets where the dealers have been handling raisins for 20 and 30 years. They have made no discrimination according to flavor. They purchase, in southern France, according to size. In Malaga the business is run different to what it is here. There the people have not the means for packing and the purchasers go around and buy the raisins from vineyards of five to ten acres and they take them to their own packing house, and pack them under their own brand, and make their own grades, and when they come to this country they are known as their brand, and probably have

been brought from miles around to that packing house, probably with two flavors mixed in them. But as I say with California raisins the difference is so slight that there is never such a thing thought of in the eastern market as discriminating on that ground, but they purchase as to the size and according to the looks, and I do not think the flavor cuts much figure in the raisin business.

The President.—I would differ from you in one thing. for instance that there is not much difference in the flavor. You may travel twenty or thirty miles around Woodland and when you go to the higher elevation you find a very differently flavored fruit. We have a climate here that is cool, but you go to the interior and they have greater heat and it would make a separate grade.

Mr. Jacobs.—If that is so the raisins would run very uniformly. Still I do not think there is very great difference in flavor of the California raisin. I have spoken with the dealers east about that matter, for I left here about five weeks ago for the east on that particular business, and at that time I had heard considerable about the flavor of raisins of the El Cajon which are said to be much superior to other raisins. I mentioned that fact to some of the larger dealers east, but they did not think the difference in flavor would make any difference in selling. I think the difference in other districts is to be accounted for in the curing. I think you will find irrigated raisins are not juicy and meaty. My opinion is with Colonel Bremhall, that the raisin should be cured enough to retain the juice, so as to give them partially the flavor of the grape instead of being as hard as some of our California raisins have been. That has been a great cause of the prejudice which has always existed against our raisins.

I consider that the flavor of many of our raisins is just as good as the imported fruit, but of course the overcuring has hurt it. Whether eventually the people East will discriminate in that regard is a question of the future.

Another question is whether the growers here themselves will not, by noting the errors of the past, be able to make their raisins of a more uniform flavor, but so far as the consumers are concerned East, I do not think the flavor has cut any figure at all with them. I think they buy a good London Layer raisin because it is branded a "London Layer," and recommended to them by the dealer as a good London Layer; and as to the flavor I do not think they pay particular attention. We, on this coast, having such a great industry as the wine industry, may have acquired a delicacy of taste, for I suppose in wine the flavor makes a great difference.

The President.—I was not alluding to that, but I have seen criticisms in the London and Eastern papers, which made the remark that in size our fruit would compare with good London Layers, but in quality, fullness and meatiness it would not. Now from what you say, and it simply confirms Mr. Bramhall, we can accommodate the market if it is simply size, for Mr. Wetmore will show you that it can be done by proper pruning and cultivation.

Mr. Jacobs.—We sent a sample of the fruit to Australia as an experiment. Those raisins were particularly fine and of large selection. We wanted to see how they would compare with the foreign raisins. The answer came back they were fully as good, and they did not say anything about the flavor not being as good. The raisins sold for a good price, and they said the next season they would take a large quantity of them.

The President.—Maybe the flavor was better.

Mr. Jacobs.—Nothing was said about the flavor.

Mr. Jackson.—I must confess there is a great difference in the raisins on exhibition here. The difference is very marked. Now, what is the reason of it? Is it the curing? Is it because it has not been irrigated? Is it because it was grown on the hill or in the valley? Or is it particularly in the growing, or because it was finished in the curing in the dryer, or because the leaves did not cover it and it got sunburned? I ask these several questions.

The President.—Those will all have to be determined in time. On this point of quality I would like to call upon a gentleman who is largely interested, not only in raisins, but in water. It is from him we must receive the water for San Francisco. I will now call upon Charles Webb Howard. I think thrt gentleman is also a good consumer of raisins, and I think he ought to know something about how it satisfies his palate.

Mr. Howard.—I must ask the President to excuse me from making any remarks.

The President.—I am extremely sorry. We would now like to hear from Mr. Jackson, the Chairman of the Raisin Committee.

Mr. Byron Jackson.—I am not a talker, and if I was, I don't know that I could give you any information on the making of raisins, because I am not a ralsin maker. I simply happened to be compelled to investigate it because I have invested in it somewhat, and what I know is mostly what I have heard from others. Yet I have had a little experience this past season in making raisins, and on this one matter of flavor I find that these varieties are all more or less affected in the sweat box, but I am satisfied it is in the curing of the raisin and growing of the grape, and not particularly the soil, and possibly not particularly the vine, but it occurs on account of the particular things I have already

mentioned, the first crop and the second, third and fourth; and finally the vine grows out ten feet from the roots. Probably the growing on the hill-side in the older countries may have something to do with this flavor, or want of flavor, and this additional crop. As I understand they grow them in Europe only about four feet apart, and some of us grow them ten feet, and they are very large vines. There they only grow them four feet and only allow three or four, or five, or six pounds on a vine, and very likely tn that way they get a more uniform size and flavor; I don't know whether they do or not, but it is the only way I can account for it. I was put on this committee, as chairman, just before I went home this evening. There are four gentlemen on that committee—Mr. White, Mr. Smith and Dr. Blatchly, and I have been unable to meet any of them, and consequently have not any special report to make. As to giving you any information about raisin making I hardly feel qualified because I have not had sufficient experience.

The President.—You will have occasion to meet these gentlemen to-morrow, and your report will be accepted at any time before the convention adjourns, and we would like to have you write your report. For a man that does not know anything about raisins you have been very successful in giving us information, and I would like to have your opinion in writing, and I am sure the other gentlemen will coincide with me.

Mr. Jackson.—If I can meet the committee we will possibly write a report, and not take the time of the convention. There is one thing I would like to ascertain, but do not wish to create any discussion, but if any of the members of the convention know about it, I would like to learn, and that is about dipping the raisins. I saw some of my neighbors dip the muscatel; they must have some reason for doing it, but I did not understand it. I went to Mr. Coleman and they took all the means they had to obtain the different methods for me, and giving me directions how to do it. I went on and made some experiments with seedless Sultanas. Now I do not know what the object is in dipping Muscatels, and if there is any object I would like to know.

Mr. Bramhall.—It reduces the thickness of the skin. That is the process they pursue with the Valencia raisins. It is an irrigated district and consequently the raisin there is naturally much thicker skinned than the southern Malaga raisin. That is the reason for subjecting it to the alkali process.

Mr. Jackson.—The reason I brought the subject up was I thought it might have some effect in making raisins of our second crop, hurry up the drying.

The President.—We will now hear from Mr. Wetmore.

Mr. Wetmore.—I won't keep you long, but I feel there is just as hard work among the raisin-makers as among the wine makers. Seven years ago we had the same talk among the wine-makers as to quality and quantity, and they have got bravely over it on our side of the house. I don't know of anything in the world that we are now convinced we ought to do so much as to seek after quality. It is the foundation of all success, and if the raisin-makers are going to start here to-day as our growers did in making wine fifteen or twenty years ago without seeking quality, they will find just the same objections that we had, and have to start over and correct their errors. It is possible to increase the raisin production of this State immensely, and you have a certain limited demand such as the wine-makers had for consumption. You expect to increase that demand, and you will never increase it if there is not improvement in quality, and the remarks here are very inconsistent. I make these remarks just as we do among our wine men, and I hope there won't be any ill-feeling. I want to say in passing that I deem Mr. Jackson a man not poorly informed but well informed. The inconsistency is this, the representative of Mr. Lusk says the market has been practically ruined lately by sending a great many poor raisins East, and yet he goes on to say that quality does not affect the market.

Mr. Jacobs.—I did not say that. I said there was no difference made on account of the quality. The poor raisins, I said, that were sent East ware damaged by rain. I mentioned that they were raisins which, last fall, when the rains came were taken in various stages of soundness and cured.

Mr. Wetmore.—I will take it all back then. But I have heard this said in the past that they were making raisins out of Tokays and all other grapes and they were ruining the Eastern market. I have heard my friend Mr. Howard comment on the raisins and the poor quality that they are sending East. I am talking about the consumers now, not the trade. They are a little critical as to the quality of the goods and it is the consumers that create the consumption and demand, and when they are satisfied there will be no more difficulty with the market. If that is not true I would say to these gentlemen that the consumers of raisins have very poor taste and have very little regard for what they eat.

Mr. Bramhall.—I don't know that it is material to show what is the taste of the consumer. As I understand the matter Mr. Haraszthy asked which was the most important consideration in the disposing of raisins, and I was obliged to answer that a raisin of a small size and superior quality would not sell as well as a raisin of of a larger size and inferior quality. The

larger would sell sooner and for the best price.

Mr. Wetmore.—We believe you, we accept that fact, I have no doubt of it for you have a limited market. We have only ten per cent of the consumption, but when you have fifty per cent of the consumption, the question is then whether quality will not be considered.

Mr. Jacobs.—When we speak of the question of quality we consider that the dealers do discriminate according to quality by taking the larger fruit. They do not consider the question of flavor in d ciding the quality; if the fruit is large and fine they also conclude that it is of the best quality, so we do not say that they buy inferior raisins because they buy the largest. They suppose the largest raisin is the finest, consequently they will pay the highest price for it. As to ten per cent of the consumption I will state that people in the East who never before used California raisins have used them the past season. I have conversed with a great many consumers and they claimed that the better brands of our raisins that they have bought East have as fine a flavor as the imported, and they have used ours in preference.

Mr. Wetmore.—I do not say that we are not making just as good raisins as the imported, but I say many of the raisins we are making are not as good—I mean not as as good to eat. What I mean is this, we are here in an instructive meeting; we are supposed to be saying something that will aid some one in planting a vineyard or in cultivating one; is it to be understood that we are here to advise people to regard quantity and size as paramount to all other questions, or shall they not make some sacrifice in other points to get an improved quality ?

Mr. Jacobs.—I will state that in all fruits, not only raisins but other fruits also, size is considered to be a test of quality. A fruit tree is thinned in order to produce a larger sized fruit, it is also admitted of course that when a fruit gets too large it loses some of its flavor, but there is no reason why a large California raisin should not have as good a flavor as a small one, and if we come to discriminate according to flavor and not according to size we would have more than we could attend to in this State to discover the flavors of the different vineyards. I think we are not looking at this from a practical business standpoint at all. I think we should look at it as a business that is not going to be affected materially for years to come.

Mr. Wetmore.—I do not think we understand each other. All things being equal size is to be looked to, but other things not being equal is the point we are raising. The gentleman has called attention to the defects in these productions. I would like to say that nearly every defect that they point out is the exact result of following the desire to get quantity and size. One of the defects is bad curing; then lack of juice, lack of sugar, absence of ripeness in the grape. You cannot leave all the moisture in the grape. If you take the water out and there is no sugar you evaporate the juiciness and you are bound to have those dried up raisins. This is one of the very defects that we are calling attention to, and you will not rectify it by any methods of curing, but by growing a different raisin.

It should not be considered possible in this State, as it is not in other parts of the world, that you can get a good raisin anywhere. The area will be limited, as it is in Spain, the Malaga raisin is better than the Valencia. Valencia is described to me as a limited area. They have to use this dipping process in the Valencia district for the skins of the grapes are so thick. We find some trouble in this State in the low damp sandy bottom land; they go too much to skin and seed.

Now if we are to guide this industry in this State we must get it in the right place, no matter who it hurts, and I cannot advocate the doctrine because you get a big fruit in one place there is no difference in the quality. I don't eat many raisins but what I do eat I want to ta te nice. I am one in fifty millions of people, picking at a bunch of raisins and that is what creates consumption and the amount that will be eaten will vary probably, according to the quality, as much probably as five to one. If you are going to get rid of your raisins they must be the best raisins produced by the best method of cultivation. If you find a ripe raisin with plenty of sugar you will find a juicy raisin without doubt. Mr. Jackson touched on that, how to get flavor and quality. It is in cultivation. This one grape is ripe and the other is not, one side is ripe and the other is not. This can be regulated to a certain extent by the pruning. In pruning there are rules that are known to all classes of cultivators whether it is of vines or trees. You can over-load a tree and force it to grow and fill it full of fruit, but what kind of fruit ? It may be large and showy but tasteless; you may do the same thing with a grape. There is a certain given ratio between the vitality and the moisture, and the strength of the vine. It does not follow that the vine is stunted because at one place it bears five pounds and in another fifty. The finest grape vines do not produce the best fruit. Almond trees do not grow well in your low bottom land but they produce best in dry gravelly soil where they make small trees. The object is not to create wood but fruit. I do not intend to go closely into this subject.

As to the control of the second crop and the perfection of ripening it can be arrived at by planting the vines a certain distance apart and selection of the ground which they are grown on. I have no doubt about

that. Mr. Jackson knows enough about vines to know that if I leave but five spurs on in the spring it will throw out a second crop. If I should leave all the wood on in the spring it would not have any second crop.

Mr. Bramhall.—What would be the quality of the first crop.

Mr. Wetmore.—In that case they would not develop well. I am taking an extreme case. If you do not prune it at all there would not be any second crop.

Mr. Bramhall.—Then the second crop is a necessary evil.

Mr. Wetmore.—No sir, it can be controlled, I am only showing how it can be controlled in that way. The cause of the second crop is the forced secondary vegetation owing to the excess of vigor in the vine wanting a sufficient outlet for its growth; it is literally the growing of the wood of the next season. The bud that is forming for the next year's growth is forced out by the vigor of the vine.

Mr. Bramhall.—How would you control that?

Mr. Wetmore.—I could prevent a second crop by planting my vines a foot apart, overload the ground and there would not be strength enough or moisture enough there to force out this extra growth. You see then your land is not strong enough to force the vine. That is a thing to be studied, either by planting the vines closer or by letting all the wood grow, or as they sometimes do in France pinching the laterals. Indiscreet summer pruning forces out the second crop. Sometimes it is found necessary because the first crop is lost. That is why some of the raisins come in so late in the fall and in an unripe condition. In Riverside where it is so excessively warm they perhaps might make use of their second crop.

Mr. Jackson.—I was with a man once who went around and cut the tops off the vines in spring just as they started out.

Mr. Wetmore.—That is a prevailing practice and in nearly every case it is an outrage on the vine for the objects of summer pruning can be obtained by winter pruning. By that means you are just trying to overcome what is termed coulure, a subject that I have treated upon in my report, the blighted appearance of the first crop leads you to want the second crop. If you had the first crop well set you would not want the second crop, you have enough on the vine, but if you lose the first crop then you want the second crop, and that comes in so late that there is not sufficient sugar in it. Like our second crop of Zinfandel it is sour and does not ripen, and for the purpose of candied fruits, or ripe fruits you want the full ripeness. What you want to try to do is to get the first crop to set.

I think Muscats are being grown in this State where they will not answer and will finally have to be abandoned. On some of these low sandy lands there is difficulty in getting the first crop. Two years ago I went from Orange to Riverside; there I conversed with the raisin growers to find out under what circumstances the first crop failed, and I found almost invariably it was on the low sandy lands, and where they succeeded and stood well was where there was more or less clay in the soil. Why it is that the soil caused it is quite a difficult thing to determine, but I think I had studied out the truth, such vines are sickly and of weak growth in the spring time. The overloading of the plant when it is not sufficiently strong leads to mildew for which one of the remedies is more or less sulphur at the proper time.

I think it might be corrected by long pruning in the spring, and then shorter, later in the season.

Mr. Jackson.—Cut off those vines later in the season ?

Mr. Wetmore.—I think by pruning them to four or five buds and after the buds are out four or five inches, and then cutting them back to the lower buds that you are going to get the fruit on later and you will set your first crop. I feel confident that we can do it.

Dr. Stillman has planted Muscats out on a low sandy deposit and he tried the plan that I suggested last year and he thought it was going to work, and though it did not work he saw so much difference in it that he believes in the theory. I believe in some land that a long cane of eight or ten feet with a spur to come back on, and a short cane fastened down to the ground will do well with the Muscat.

The size of the berry can be controlled very largely by the distance they are from the soil. The higher up they are the smaller the berry, the better fruit being down near the ground. By keeping them down you can have large berries and ripe berries.

Mr. Bramhall.—How can you control that fruiting near the gronnd ?

Mr. Wetmore.—By pruning. You can dig a hole around the vine and make it grow right down in the hole. That is the way they are grown, near the ground, except among those who have to irrigate in the summer. Then when the high summer sun comes on the fruit they get small as they do in other places. You then get them large again by putting more water on. Then when you dry them out you say there is no juice in them, you mean there is no sugar in them. The determination of having size and quality together I believe to be the true test of success in raisin growing, and not size alone.

Mr. Bramhall.—Size is regarded as one element of quality.

Mr. Wetmore.—Yes. It is the most difficult branch to viticulture on account of finding the right place for it. In all Europe there is only one Malaga. And there is only one district really where the seedless Sultana

is grown to perfection, there is only one part of the world that grows the currant grape. We cannot do much with them here. In this State we will find some places where the Muscat cannot be grown and it is no use trying to deceive ourselve of that fact. There are places in this State that will be superior for the Muscat and others inferior, and I think it is wrong to make people think that we can grow the Muscat everywhere and get a fine grape, market their raisins and that the market will not distinguish in quality.

I believe that covers in a sort of general way all the trouble that is with the raisin makers.

The question of public taste is something that the merchant knows more about than we do. I doubt myself whether there is ever going to be as critical a taste in the matter of raisins as there is in the matter of wine. I do not know whether that is because the raisins are only used occasionally and do not produce any great delight to the person tasting them. They are nice sweet things to eat and that is all you can say of them. They do not rise to the distinction of wine ; they do not produce the result of pleasurable sensation, but I do believe that we will do wrong if we do not couple this idea of size with the idea of quality and get the growers to aim at it.

Mr. Jacobs.—In speaking of size being a test of quality I would say that when the purchaser buying in the Eastern market buy five or ten car-loads of a brand, he will touch the raisin to see if it is tender and if it is tender and of good size he will consider them as of good quality.

The President.—I was in a restaurant here where they furnish very fine wine (we furnished the wine) (laughter), and they placed some very fine raisins on the table with the nuts and after the nuts were cracked we went for the raisins ; my friends said here is something very fine. Between the six or seven of us at the table we ate three raisins. It was a hard raisin and tasteless. Such sorts of raisins may do for a restaurant raisin—they will stay there a long time—but it is not profitable for the grower.

The evening I think has been a profitable one and it being late we will bring it to a close. To-morrow morning and part of the afternoon will be devoted to the tasting of the wines and should we meet any persons who are interested directly or indirectly in our business we shall be very glad to show them the different qualities of wine we are making. In the afternoon we will discuss the experiences in fermentation during the past vintage, which has been the most difficult one we have had. Three-quarters of the wines were not fermented out this year.

The convention was then adjourned until the following morning at ten o'clock.

THIRD DAY.

AFTERNOON SESSION.

Wednesday, March 17, 1886.

The President, Arpad, Haraszthy, called the Convention to order and stated that the subject for consideration for the afternoon and evening session was fermentation as carried on last year, its faults, effects, advantages and disadvantages, and first called upon Professor Hilgard, who had kindly consented to speak upon the subject.

PROFESSOR HILGARD.

I am called upon rather suddenly to make some remarks on this subject, but I shall draw as well as I can from recollections, and make some remarks on what I have seen from the vineyards of 1885. In the first place, as of course you all understand, the vintage came around in a great hurry, the grapes in nearly all portions of the country had a very large amount of sugar, they ripened in hot haste. I have seen a great many grapes go to the fermenting vat with twenty-nine, thirty, and even thirty-two per cent. of sugar. Of course the fermenting under those circumstances was a somewhat critical question. You know that any wine with more than twenty-eight per cent. of sugar is apt to ferment out with some difficulty ; it requires peculiarly favorable circumstances to bring about a thoroughly dry wine in that case. Of course it can be done. You may ferment out thirty per cent., provided the circumstances are all favorable.

In regard to the unfortunate circumstances which accompanied the last vintage, one of the prominent was, that a great many unsound grapes were mixed in, almost everywhere, when the grapes were vatted. I visited a number of wineries at the time of the vintage and I noted very few bunches were to be found that had ripened uniformly, or had not some berries dried up. Towards the end of the season when the weather became moist the fruit became mouldy, and the consequence was that a good many of the grapes went into the vat under very unfavorable circumstances for sound fermentation.

A number of cases have come before us in which the wines were fermented out as far as it was possible to ferment them out, but they were not satisfactory. I had one wine sent me which originally started at thirty-five per cent. of sugar, and those that sent it imagined that it could be fermented out, which of course it could not. The wine happened to remain sound because it fermented out to fifteen per cent. of alcohol, and that was enough to prevent its going wrong. But in other cases wines that have as much as twenty-eight per cent. of sugar fermented out ten per cent. of alcohol and all the rest of the sugar remained. Of course that exposes the wine to great danger,

and if, as frequently happened during this last vintage, unsound grapes entered the vat, the result would be that milk-sourness set in.

I want to speak about the tendency to milk-sourness which is excited by a too high fermentation. It is generally known and accepted in all other wine making countries that the temperature for the most rapid and successful vinous fermentation is somewhere between sixty-five and seventy-five degrees—some say a little less and some say a little more, but the successful fermentation, and most rapid conversion depends a little on what else is present in the must. If then, the vinous fermentation proper takes place most readily and rapidly at a temperature between sixty-five and seventy-five, if you fall below sixty-five or rise above seventy-five the fermentation is weakened. Now the improper fermentations, such as the lactic, acetic and mucous, are favored by a higher temperature, such as runs somewhere between seventy-five and ninety-five. You can thus readily see that in our warm vintage weather, the fermentation in a vat which starts perhaps at eighty-five or ninety, as I have often seen it, the vinous fermentation is weakened, and on the contrary, the lactic and other improper fermentations take precedence. So it is not at all strange, considering how many unsound grapes went into our vats last year, that we find many unsound wines. But I confess that in the tasting done here I have been pleasantly impressed with the fact that although a large proportion—I should judge about two-thirds of the wines, have yet from one-half to two per cent. of sugar, that a relatively small proportion is actually milk-sour; and I think we have reason to congratulate ourselves on this state of the case.

I want to call your attention to one point in regard to this topic of arrested fermentation that has been so largely reported this season. In the experiments made at the University we had only one opportunity of observing the stoppage of fermentation. That occurred in a hot box in which we ferment very small quantities of must, and in which by accident the temperature rose during the night to 110 degrees. The fermentation was checked and did not start again. We put a little fresh fermenting must into it and it then went through without any further difficulty; but it would not start of its own accord. The ferment germ had evidently been killed by the high temperature, which was 110 when we came to it in the morning, but might have been higher during the night. I have this very year put my hand into fermenting vats, just below the cap on the top, where the temperature was so hot that it was uncomfortable to the hand; not to scorch it but uncomfortably warm. Observe that the temperature in the tank may be very different in its several parts. You may take the temperature at the bottom of the fermenting vat and may get 80 degrees, and you may take it at the top of the hat or cap that is on the top and you may again find it 80, but you put the thermometer down to where the liquid joins the cap and you will find it is 110 or over. The reason of that is the yeast rises up from below and right where it accumulates on the top of the liquid beneath the cap, is essentially the place of the highest temperature. There the fermentation is quickest, and the temperature may be so high that the germs are killed right then and there, although on the top and bottom of the vats it may not be high enough to do any damage. I may say that from the correspondence I have had from persons sending me wine for examination, I am inclined to think that by far the largest proportion of the accidents to fermentation are reducible to the fact—that tanks were started too high, and afterwards they were not sufficiently stirred to insure that the temperature which is underneath the cap would not rise so high as to injure the yeast.

Another obstacle has been the difficulty of starting fermentation again without fresh must, which we know this year it has often been difficult to get. So far as my experience has gone, where there was fresh must or fresh grapes to start the fermentation over again, the wines have gone through without any difficulty.

Among the wines that have been sent here I have found but few which, according to my taste, contain more than about one-half to one and a quarter per cent. of sugar, and so far as those wines are concerned, I think you may safely expect them to ferment through, provided you give them sufficient air in the racking; but to keep them close bunged now, without sufficient aeration in and racking, I think will be likely to make a large proportion of them milk-sour. Aeration in racking is a wonderful preventative of that. We have tested this in the University experiments. We have racked some samples of wine considerably and others less, some have received considerable aeration and others not much. In the one case it remained turbid and became milk sour, in the other it cleared and fermented through without any difficulty. I think that a large proportion of the sweet wines we have tasted to-day would go through in a similar fashion.

Now, as regard the general quality of the wines of this year, I have had under examination about 70 or 80 samples, and I find some very remarkable characteristics. The must from grapes that came to the laboratory generally showed a remarkably high acid, which was unexpected because it is usually the case that when the grapes mature very fully, the acid is very low. I have had Zinfandel come to the laboratory with 8 pro mille of acid, but as these musts had so much sugar and got very strong in the fermentation, of course the greater part of the acid went out with the lees, and the

wines were not particularly acid. There was therefore a large preponderance of acid, notwithstanding there was an unusually large proportion of sugar.

Another thing which seems to be true, and which I also find in tasting the wines here, is that the amount of tannin in this year's wine is uncommonly high. Why, I have not been able to make out. Between last year and this, in the same localities, I find about 50 per cent. more. For instance at Mission, San Jose, Mr. Gallegos' wines have usually about 7 to 9 ten thousandths of tannin, this year from 11 to 13. On the West side of the valley, the same wines, for instance the Cabernets last year that had 10 and 11 ten thousandths, this year have from 15 to 16. And so it is throughout. It appears, then, that most of our wines this year will be found to have relatively a larger proportion of tannin than you can count upon in ordinary years. Of course comparing them with the previous year 1884, the difference will be greater than that I have stated. I have tasted this morning one remarkable sample of Trousseau, from Cupertino, that in my judgment must contain 10 or 12 ten thousandths of tannin, while the Trousseau that is generally raised here contains about 5 ten thousandths; so here the increase has been very remarkable. Of course in blending, it is important to take that matter into consideration. The same plants that last year would give you about enough tannin, this year would give you an excess. Taking the wines all through the difficult fermentations notwithstanding, we have this year an uncommonly large proportion of alchohol. Again the wines that are in ordinary years light-bodied are this year relatively heavy-bodied; this is the natural result of high maturity, and if only we can keep them sound, I think that the character of these that have gone right up to this point, will be very fine. But I must confess that if (as unfortunately I have not yet), I had personally wines at stake such as many have, I should make extensive use of the pasteur apparatus. I suppose most of you in general know what this is, but do not perhaps know how easy it is to construct this apparatus, and how easy it is to make a number of those wines, which are now in danger of becoming milk-sour, perfectly secure against it. You really need little more than a good still worm, and reverse its action. Pasteurizing means nothing more than this—to heat the wine to a certain temperature. In some cases 140 degrees is enough, but we will say 145 to 155, and even 160 is not too much for some wines that I have tested. The heating must be given in some way so as not to injure the aroma, or to disturb the wine. The older wines that are bottled can be pasteurized by immersing in hot water of a proper temperature, and letting then cool off as rapidly as possible. Pasteurizing in the bottle is much preferred in France for delicate wines, but in pasteurizng on a large scale it must be done differently, You have to provide a heating coil long enough, but not too wide like a still worm kept hot, so that the wine can come out of the end where the spirit usually comes, at a temperature of about 150. That stops at once all fermentation, and after that whatever happens to the wine is due to subsequent negligence and not to what was there before. In other words, if you pasteurize the wine in that fashion you can rid it of whatever unsound germs are contained in it now. I do not mean taint of mould, or bad taste, such as are imparted by mould or the scum that gathers on the fermenting vat; but you can rid it of an acquired tendency to milk-sourness and pricking. You can then take a new start, as it were.

To give you an idea of what might be done in this way : the wine that is now just about milk sour, but is still sweet and contains four or five per cent. of sugar, that you do not know what to do with—you do not want to distill it--might be pasteurized now, and then it may keep until the next vintage and be started afresh with new wine or fresh must, and carried through. Such a thing is possible; I do not say it is the right way to do it, but you can stop right now the injurious actions of the noxious germs that are in the wines, the vinegar sour and milk sour germs by this pasteurizing process. There are but few who have perfect arrangements of this kind in the State. They ought to be in every good winery; they ought to be in every winery that wants to prevent accidents such as might happen in every establishment. I quote the case of Mr. Gallegos, of Mission San José, who constructed an extremely simple pasteurizing arrangement, which runs about five hundred gallons a day. That is constructed simply of two coils of tin pipe, half an inch, I believe, in the inside diameter, and one of these coils is immersed in the heater and the other coil in the cooler. The heating is accomplished simply by a large iron boiler, running around the inside of which this coil is placed touch the inner surface. The one to do the heating is raised above the cooler, and by hanging the thermometer at the point where the spindle usually is in a still, and taking care that the temperature is at 150 when the wine runs out, you have the wine made safe for the time being against all noxious germs.

It is preferable, as a rule, to cool the wine as quickly as possible. The quicker it is cooled after it is heated the less is the danger of injury to flavor, and of course pasteurizing in a bottle would be perfectlon except for the slow heating and cooling it goes through. The best pasteurizing then, consists in heating the wine to a temperature of 150 degrees as quickly as possible, and letting it run into the cooling coil, in which it is very rapidly cooled down to the ordinary temperature. But even Mr. Pasteur

himself states that in case of ordinary wines, they may be allowed to run into casks, well sulphured in the first instance, and clean free of all noxious germs. Let it run from the pasteurizing coil into the cask, so that it will have a temperature of 145 degrees when it is full. It is then in a condition in which it can be kept bunged up until wanted for future use.

I think with this small apparatus, which you see implies as a matter of necessity only, a still worm, carefully used, and the water outside of the coil heated up by a fire from below, or by steam, is not a matter of great expense. you will be enabled at once, as soon as the wine starts on the wrong path, to stop it, and stop it for good.

I think this vintage shows the great necessity of this pasteurizing arrangement being very largely utilized in California, for the reason, particularly, that our vintage temperature is abnormally high. We cannot help ourselves, we have not as yet cool cellars in which to ferment, and by the way we don't yet count on low-fermentation anyway. It frequently happens, therefore, that in the hurry of the vintage, wine contaminated with noxious germs is the outcome. We are, therefore, doubly under the necessity of making extensive use of pasteurizing.

In the case of wines that have already acquired some age, and have acquired their bouquet, which you do not want to lose, it is absolutely essential that the cooling should be done right off. Wines, which you have already valued for age, must not be treated in the way I have mentioned, to be run into the cask hot. They must be cooled immediately when coming out of the hot worm, and then they may be considered safe.

I do not know that I have anything more to say on this subject just now, but I think I might say this in general: This vintage, as I think, proves more than we have ever had before, that it is necessary to attend to the government of temperature in our wineries. In other words the hot-and-fast fermentations have to be done away with, we have to ferment at a more moderate temperature, and we must have better control of that temperature than it is now; or otherwise our shipping wines will inevitably bear within them this evil of improper germs.

I can only reiterate, and I think it well to do so, what I said in the beginning, that a temperature of 65 to 75 degrees is best for vinous fermentation, although it may seem to some of you that the evolution of carbonic gas is greater at a higher temperature. That is all a delusion. It has been shown hundreds of times that the formation of alcohol is the quickest at a moderate temperature. There is no doubt about that. It has been demonstrated over and over again. That may not seem to be the case; to you sometimes it may seem that the gas is escaping faster when the temperature is higher, but as a fact it is greatest when it is between 65 and 75 degrees. Seventy-five degrees is as much as you want for fermentation. Why then should we want a higher one, when that is the one that favors the wrong fermentations, the lactic and acetic? I think that these high temperatures should be avoided among the very first things. We have a great many wines before us to-day that show manifestly the fact of "pricking." The "pricking" usually occurs right on the top of the liquid where the hat is allowed to remain, and there again the high temperature of the hat on the top of the red wine tank leads to vinegar formation. Then if that hat is pushed down the vinegar germs go through the whole wine.

You know the practice of fermentation in this State has assumed about three different shapes. The common form is simply to let the hat rest on the top of the wine and then take care of itself, until the wine ferments out. The wine is run off below when the fermentation is over; the pomace is not then fully extracted, and it is sure to sour. That of necessity must make a faulty wine. To prevent that there is another way of submerging the pomace by means of frames. If that is done by using several frames, or if one is submerged deeply enough, it is a good method. But if the liquid above a shallow frame is not changed; if it is allowed to remain on the top, the same liquid being thus exposed continually on the surface, that portion of the wine is bound to be imperfect--not only vinegar-sour but milk-sour. Then when you draw off from the bottom of the tank, that milk-sour wine goes through the whole of it, and thus you have a faulty wine at once. A third method is coming into vogue, that of stirring the pomace several times a day. This is probably the best and is the most approved in France, but you must be very particular that it is done often enough, so as to keep the pomace thoroughly immersed; and in the second place that unsound grapes do not get into the vat. You can make white wine out of unsound grapes with comparative impunity, but in red wine the pomace is so long in the wine that it is going to make trouble just as soon as you do not take particular pains as to proper selection.

I suppose I may take it for granted that you understand from the result of the tasting through this week, if not in general, that what we must now aim at is not quantity of wine, but good wine. Mr. Westmore and Mr. Pohndorff have given you reports from the East, which show that all we need for opening a market for our wines is *good* wines, which a large proportion of them are not at present, that they should be made so as to stand transportation, and not spoil in the hands of the dealer or consumer. It is quality and not quantity that we must be after if we want to make

money, and I think that this year's experience will go very far towards impressing this fact upon our wine makers.

The President.--In the matter of refermentation, or secondary fermentation of red wine, I mean after the vintage is over, where there is a certain amount of sugar left, but where the fermentation is favorable to disintegrate the carbonic acid gas, is it not likely to lose color ?

Prof. Hilgard.--I am not aware that it is.

The President.--My experience has taught me that it loses about one-half of the color in red wine; when that is the case I have noticed that they are also likely to lose flavor.

There is another thing, in speaking of the amount of tannin, did you test the tannin from the grapes direct, or did you test it in the wine ?

Prof. Hilgard.—I tested it in the wine.

The President.—Would it not be a great deal better to determine the quantity of the tannin likely to be introduced by taking it from the grape itself, for the fermentation itself, varying from one to four weeks, may have some effect upon the quantity of the tannin ?

Prof. Hilgard.—We made experiments in that respect which demonstrated one point very plainly. We had, I believe, Zinfandel from Lower Lake. It showed a large proportion of tannin in the young wine. After the fermentation had gone for about seven days after the crushing we determined the amount of tannin. A part was then left at rest for ten days longer on the pomace and the result was precisely the same in both cases. I have made repeated experiments of that kind with other wines, and my experience is that, as a rule, we will gain very little tannin after the first week unless the stems are there, for then it will take longer for the full extraction, but with the wines coming up to the high percentage of alcohol of our California wines, I do not think there will be any great gain in tannin after the first week or ten days.

The President.—You think it would not be increased by longer fermentation ?

Prof. Hilgard.—There would not be as a rule much increase, and the increase that occurs is not from the skins but from the kernels. It is well known that the tannin can be extracted from the kernels by addition of alcohol. I think that leaving the wines too long on the pomace is objectionable for the making of a high quality of wine, is not that your opinion ?

The President.—Yes. They leave them much longer in Bordeaux than they do in Burgundy, and yet the Burgundy wines have more tannin than those of Bordeaux.

Prof. Hilgard.—It comes back to what I say, that from the larger proportion of alcohol that we usually have in our Californian wines I think that we can get as much tannin as we safely can, consistent with the clean taste of our wines, about when the violent fermentation is over.

The President.—The great trouble of it all is that our wines are tasted now to determine the qualities of them when they are new and if they happen to be rough now they are condemned. In Bordeaux they do not attempt any such report until they are four years old, and they expect them to be rough up to that time. If we are to imitate that style of wine we ought to defer our judgment until the second year.

Prof. Hilgard. — Whenever the wine makers of California are willing to keep their wines for four years as they do in Bordeaux, that course would be the right one to pursue.

The President.—Let us divide it and say two years.

Prof. Hilgard.—There were some wines that were sent in from Fresno that contained an extraordinary amount of tannin. They had been left six weeks on the pomace with the kernels, and they had become tolerably rough in that time. I think we must admit that there is a limit of desirability in the amount of roughness we can give to our wines in that way. Except for common wines I must say I should not advise, generally speaking, allowing of the wine, however light, to remain on the pomace after fermentation is completed.

The President.—If it did not acquire a bad flavor or suffer afterwards there would be no objection. Every Californian who has noticed the gelatine would eliminate a great part of it, as long as there is no parting with the tannin properties.

Prof. Hilgard.—I would say more than that. Far instance with many varieties of Cabernets that we have tried, the remaining on the skins for a long time would be desirable, providing only that the grapes are perfectly sound. But in the case of these large Californian wineries in which they crush the product of from 100 to 600 acres, it is hard to be sure that the grapes are perfectly sound, and after you have immersed them for a long time on the skins the unsound grape is going to tell, and it tells more after fermentation than during the process, for the active fermentation keeps the other processes in check. But as soon as the unsound fermentation commences in the pomace, every day that you leave your wine on it it is likely to deteriorate in flavor. I am merely speaking for our present Californian wines. I do not believe that we can afford to leave wine on the pomace very long. I find more wines faulty from that cause than from the too early racking of the sound wines.

The President.—Now about Pasteurizing. Have you not found in your experience with Pasteurizing that it only prevents fermentation for a very limited time, if there is any amount of sugar, say one-half to two per cent of sugar—two per cent of

course is a large amount, but say from one to one and a half per cent of sugar.

Prof. Hilgard.—When the Pasteurizing is properly done I think European experiments show that the wine will remain still. But of course it must be done with extreme care. It is so easy in a damp, unclean locality to get bad germs right in the cask itself, that you cannot rely on absolute immunity for a great length of time. But by keeping off the impure air I think it ought to be perfectly good.

The President.—I have tried Pasteurizing and I have had some success. I have tried Pasteurizing in casks. I have tried in the months of March and April and it is sure to ferment before the first or second week in June. Then I have tried in July and they were perfectly sure to ferment in the month of August.

Prof. Hilgard.—How was that Pasteurizing done, by cooling, or running into the casks hot?

The President.—It was done by running it into the casks hot. But both of these I did not try with red wines. I have tried a number of experiments. And when we have tried with white wines, for the reason that there certainly was not more than one per cent of sugar in them there was no further trouble excepting that they would change in their disposition to clarify. I did not clarify them again. They would become clear and then cloud over. They were mostly the Mission wines. For a time the wine would be quiet (referring to the red wine), but afterwards start in again. Our system is that of Mr. Curtis which is a very excellent one as you can regulate it, and the order was not to allow it less than 140 but have it range somewhere between 140 and 155. There were two systems. I had one made out of half-inch gas pipe and put in the stove, and afterwards a boiler with Mr. Curtis' apparatus which worked about the same only I could do a little more with it under the old system by keeping a man firing all the time with wood.

Prof. Hilgard.—I think from the French and German experiments with different wines, the result is that you should Pasteurize at different temperatures. I would suppose that our Mission wines would require as high a temperature as any wine to keep them safely.

The President.—The trouble in pasteurizing is that all these wines ferment out and you cannot keep them from fermenting out except in certain departments. The red wine of the Berl and the Mediterranean where Pasteurizing is mostly used, in Bordeaux and on the Rhine and other places where it is also used, those wines ferment out easily. They seldom have a large amount of sugar left over. With us it is the contrary and especially with the Mission wine, which serves to illustrate the fact that we must not depend on it. In some cases it seems to give a new energy to fermentation. I have read somewhere on the subject and I think Pasteur himself admits, by more recent investigation that there are certain germs that feed on the fermenting germs and this heat—which Mr. Wetmore recalled my attention, to a fact that I read some time ago—I was speaking to him of what Pasteur or somebody else had said about these germs, and he said he believed the way was to do this Pasteurizing and then allow the fermentation to go on.

Prof. Hilgard.—The different germs resist Pasteurizing in various degrees. The easiest killed is the vinous germ; the lactic and the acetic germs require a higher temperature, it takes more to kill them than to kill the vinous. If therefore any one wants to Pasteurize milk-sour wine, or any that is beginning to turn milk-sour, I would heat it to 160 and not 150. If I simply wanted to stop the fermentation of wine and to keep it sweet then the lower temperature ought to be sufficient but I must say that according to the number of experiments I have made the operation has to be conducted with very great care. That is why I do not usually recommend passing into the casks at once after Pasteurizing, for a cask that is perfectly free from impure germs is a rarety. It is not easy to get such casks. You may sulphur it and rinse it again with carbonate of soda, but the germs get in at the bunghole particularly if it is done in a cellar with an impure atmosphere. But if you do the filling at a high temperature, through pipes into a perfectly tight cask I do not believe that the phenomenon spoken of, that of refermentation will occur. The proof of that is the success that accompanies the Pasteurizing in bottles. In the bottle experiments 140 degrees is sufficient for almost anything, and that seems to show almost irrefutably that that temperature is sufficient to kill the germs, provided you keep out fresh ones.

The President.—You think the fault then with the wines that are overworked is that other germs are introduced?

There was a system if you remember for which a few years ago they were asking a patent, whereby the man before he started fermentation boiled the must. You remember that was going the rounds of the newspapers four or five years ago. I found that there was really something in it and that if I boiled the must I got a good fermentation.

Prof. Hilgard.—That is perfectly true if you get a must that has a large amount of impure germs in it. It will be better to Pasteurize that first.

I have seen must this year in which you could taste the mould. The presence of the mould must of necessity start the unhealthy fermentation. You might start the fermentation with must, but the lactic fermentation will occur in spite of everything. Such a must might be made sound by first boiling it. But I think that we must sub

mit to the idea of sorting over the grapes and laying aside the unsound ones. If we want shipping wines I think we shall have to pick our grapes or we cannot make sound wine; if not, every particle of wine should be Pasteurized before it is shipped, for unsound grapes cannot be excluded.

Mr. De Turk.—What do you mean by temperature, the temperature of the atmosphere or of the fermenting mass?

Prof. Hilgard.—The temperature of the fermenting mass. [Applause.]

The President.—I shall next call upon Mr. Crabb who has prepared for us some very valuable experiments, and being a man of very large experience, I am sure his report will be listened to with very close attention.

MR. H. W. CRABB

Then came to the front of the platform, but as he was suffering from such a severe cold that he could scarcely speak, the paper which he had prepared was read by Mr. C. A. Wetmore and was as follows:

Mr. President and Gentlemen of the Convention.

The theme of fermentation is worn so thread bare, that I feel unable to offer you anything on the subject worthy of your attention. The vintage of '85, was the most difficult and rebellious of any in my experience It can be attributed to the dessicating North winds that prevailed at the time, and the consequent over ripening of the grapes—thereby causing relatively an abnormal condition of the constituent parts of the grape. The fermentation commenced naturally, but soon became violent, increasing the temperature to one hundred degrees—and then ceasing entirely. We know that during the process caloric is eliminated, and in greater or less degree depending upon conditions present at the time. We also know that during the time there is a plant growth—or budding process—or germ formation—that large quantities of carbonic acid gas are liberated—and that at the completion of the process, the sugar in the liquid has been converted into alcohol.

But about just how that change was effected, there seems to be some doubt; or different theories at least. Viz: by the action of germs and by chemical action. It proceeds most favorably in a moist sultry atmosphere, with a temperature of 65 or 70 degrees— but does *not* proceed in a temperature of 95 or 100 degrees, and more especially if the atmosphere is charged with electricity, by a wind from the North. This seems to favor the germ theory, as the latter condition is utterly destructive to germ life, while the former is the most favorable to their growth. Now this excessive heat is the cause of all our difficulties. What causes it? This is the problem. Can it be caused by the growth of germs? There is no heat evolved in even the strongest vinegar by the growth of the acetic germ. In the vats of leaven I made from compressed yeast and bran, there was no perceptible increase of temperature, even in the most violent ones. It seems to me impossible, even if they were Animaculæ with digestive and assimilative organs. And suppose they are such, and they fed, lived upon and consumed the sugar, how could that produce alcohol? Would it not simply leave an insipid, perishable liquid full of dead Animalculæ? But instead of that, we find that a new compound has been formed, and of a more stable character. How is this to be accounted for? Simply from the fact, that in the decomposition of any organic substance, where a recombination takes place, accompanied by evolutions of heat and gas, that the new compound was *formed* by *chemical* action. This is precisely the case in the vinous fermentation. Now if the decomposition takes place rapidly, the evolutions of heat and gas drive out all the oxygen, and the chemical action dies out, slowly or suddenly, like the flame of a candle would for the want of it. At the same time the heat may also so affect the albuminous parts of the liquid as to partially preserve them, and thereby lessen the tendency to decomposition. Is not this germ a sequence of the commencement of the dissolution, and its function, like parasites on other decaying organisms, to create dissolution, and hence the chemical action. Assuming that the chemical theory is correct, our remedy would lie in changing our machinery, so as to only crush a portion of the grapes. Those passing through whole, would remain so, till the others were nearly done fermenting. This would prolong the fermentation, and avoid this rapid chemical action, by a gradual decomposition of the mass. Give it more access to oxygen, by using wide and shallow tanks. Another method would be to put in pieces of ice to keep the temperature below 80. Never crush any grapes picked in the afternoon when the weather is hot. Let them stand in the vineyard over night. If not boxes enough, then fill your tanks half full in the morning and fill up in the afternoon. Do not in any case undertake to ferment in tanks, more than 24 per cent sugar. When a tank of wine stops fermenting with more or less sugar, immediately add to it one fourth its bulk of fresh grapes. If not room enough—divide it into two tanks, and fill with fresh grapes. Or, pump off the wine into several tanks, and then, fill up with fresh grapes. Fermenting in this manner, is the most successful of any thing I have found. At the request of the commission, I tried on a number of tanks leaven made from compressed yeast and bran, but without particularizing, would state, with only partial success. While I believe this leaven will succeed in a small mass at 65 or 70 degrees temperature, yet it is soon overcome, when put into a large body of 100 degrees Fah. It requires a larger

amount of new fermentative matter to be successful. I pressed out a number of tanks with from two to four per cent sugar, and added 30 gallons of leaven made from compressed yeast and wine lees. This never failed to continue the fermentation, and generally to completion. This leaven is easily made, and easily kept sweet and active, by adding every day fresh lees and must, and accasionly a little yeast.

TREATMENT OF SWEETISH WINES.

As soon as possible, rack them off the lees, cutting two or more together. If this does not start a fermentation, rack them once or twice more, and give them a fining of one lb. gelatine to the 1000 gallons. If the wine is flat, add at same time from 5 to 10 oz. of tannin, and from one to two lbs. of tartaric acid. The most of the tannin will be removed by combining with the gelatine. The *main* object, is to get the wines clear and bright as soon as possible, to prevent their becoming sharp. Draw them off into puncheons by the first of April, to finish their fermentation during the summer, and be left in a sound condition. But when a white wine becomes sharp and milk sour, either distill it at once, or add three per cent of alcohol. Neutralize the acid with prepared chalk, and send it to the baking oven, where it can be turned into a fair article of Sherry. Red wines can be treated in the same manner and for the same purpose, or after it has been so treated, can be kept over till the next vintage, when it can be nearly fully restored, by being passed on to fresh pomace for a few hours, and again pressed out.

Prof. Hilgard.—I would like to ask Mr. Crabb whether he observed any higher temperature than 100 degrees in the tanks last season ?

Mr. Crabb.—I do not recollect that I have.

Prof. Hilgard.—How was the temperature observed, where was the thermometer put ?

Mr. Crabb.—I generally drew out in a cyphon, and put the cyphon into the tank about half way.

Prof. Hilgard.—The thermometer was not put into the hat ?

Mr. Crabb.—No, sir.

Prof. Hilgard.—But into the liquid below.

Mr. Crabb.—The wine was drawn through the cyphon and the thermometer was outside.

Mr. Combe.—I would ask Mr. Crabb whether carbonate of magnesia would not be better than lime or chalk, it being free from alkali and has not any taste. I have seen results from a number of them and have noticed but very little difference.

Prof. Hilgard.—I should be afraid that the carbonate of magnesia would be objected to by the consumers as tending to purge them. The chalk, I think, is about all that the consumer will stand. [Laughter.]

The President.—Are there not other questions that you would like to ask. There are a lot of things that I would like to ask. I suppose that all the experts here have noticed differences in fermentation of wine about which they would like to ask questions.

Mr. Wetmore.—Mr. Crabb made one experiment last year with Zinfandel on the pomace. I do not know how it turned out afterwards for I went away. How long was it kept on the pomace ?

Mr. Crabb.—Six weeks.

Mr. Wetmore.—Was it injured ?

Mr. Crabb—No, sir.

Mr. Wetmore.—How was the taste; was it rough ?

Mr. Crabb.—No. There is a sample of it here. There were also two samples made one with plaster and one without. The one with plaster has a lltle color, is a little clearer, and has a little more tannin, and generally is considered, I think, by those who have examined it to be the best wine.

Mr. Wetmore.—Did the wine being on the pomace contract any undesirable taste ?

Mr. Crabb.—No, sir.

Mr. Wetmore.—I think that would be the experience of others. I think others this last year have experimented with Zinfandel on the pomace. Prof. Hilgard has raised a question in regard to the practice, and I would like to hear what others have to say. There were two very remarkable Zinfandels sent here, one from San Diego, that were fermented on the pomace.

Mr. L. D. Combe.—I have experimented with Zinfandel on pomace this year, but it was Trousseau pomace that must not have had less than eight or nine per cent.of tannin according to the proportion of Trousseau in that neighborhood (Cupertino) and it was fermented two days and then drawn off and made into port wine; the Zinfandel was then put on the pomace and the fermentation commenced, continued and was carried through very easily, and the analysis proved that the wine contained just as much tannin. So it is considered that the leaving of the Zinfandel on this pomace did not help it in any way.

Mr. Wetmore.—Did it hurt it any ?

A.—It did not hurt it any, but this was in active fermentation all the time. It did not remain any on the pomace after the fermentation was over.

Prof. Hilgard.—How long had the Trousseau been on the pomace ?

A.—I put fresh grapes with the pomace, however, that is, filled the tank, in order to ascertain whether the presence of that extra quantity of pomace would not help the action.

Prof. Hilgard.—What I want to find out was whether the Trousseau on fermenting on the pomace had not taken away all the tannin already ?

A.—The Trousseau remained forty-eight hours.

Prof. Hilgard.—Only forty-eight hours?

A.—Only forty-eight hours.

Prof. Hilgard.—Then there ought to have been some of the tannin left; but generally speaking the Trousseau is very poor in tannin. I have found the Trousseau from very young vines it is true, contain three and three and a half, and rarely over four and five ten-thousandths; and it is only this week that I have come across Trousseau which I think will run as high as twelve ten-thousandths. That, however, was from the neighborhood where tannin is exceptionally high.

Mr. Portal.—Was that the Trosseau that you crushed and fermented yourself?

Prof. Hilgard.—No.

Mr. Wetmore.—One other question, Mr. Crabb. In your observations in the Napa Valley of the checked fermentations this year were they more apparent in the cellars where there was a high temperature over which they had little control, or vice versa?

Mr. Crabb.—I do not think it makes any material difference. It has happened in different cellars. I think the heat is generated immediately under the hat in the tank and is not much affected by the surrounding atmosphere.

Mr. Wetmore.—That is precisely what I observed last year. I found them fermenting both out of doors and indoors, and the worst cases of spoiled fermentation were in the best cellars.

Query.—I would like to ask the depth of the fermenting tanks?

Mr. Crabb.—Three and a half feet. The inside measurement of the staves is four feet eight inches.

Prof. Hilgard.—And there were 18 inches left vacant?

Mr. Crabb.—About 18 inches.

The President.—In this matter of tannin on which there seems to be a great deal of discussion I would like to ask what is the effect on the palate of the use of plaster, that is of a certain amount, limiting it say to two grammes, or a gramme and a half to the litre, the regular standard amount of the French government? What is the effect of that on the wine, is it an astringent?

Prof. Hilgard.—The value that attaches to it as I understand is mostly this, that the French are in the habit, as most habitual consumers of red wine are, of putting a little water with the wine; and when the water is mixed with wine deficient in tannin, it becomes flat. To overcome that they require for standard clarets about 18 to 20 ten-thousandths of tannin (say two per mille), and from 5 to 6 per mille of acid. With these proportions the wine dilutes well, astringing and retaining their proper proportions all through.

The President.—The reason I asked the question is that there was a remark made by Mr. Crabb that one of the tanks he experimented with contained plaster and the other did not and they seemed to have the same amount of tannin. Very often a wine might become more astringent by the addition of plaster and we would attribute it to the tannin. The question is whether the palate would not be deceived in the matter and would not attribute it to the tannin in place of the plaster.

Prof. Hilgard—That is very apt to be the case, for the plaster would precipitate the tartaric acid, and a corresponding quantity of sulphuric acid would take its place, which is much more pungent to the palate than the tartaric.

In making preliminary examinations of wines I generally first guess at the per mille of tannin, and I am so accustomed to it that I can guess very near unless there is a very large proportion of acid; when that is the case and especially when the acid is not tartaric but of the lactic or acetic kind, I am apt to be deceived. I made a mistake in one case but a short time ago, in which I supposed a wine to contain ten of tannin, but it proved to contain only between three and four. Such a mistake does not happen to me in a wine that contains tartaric acid only; the trouble was, it appeared to be astringent from the sharpness of the improper acids.

The President.—There is another question that occurs to my mind, whether in the addition of plaster in the tank there is not a tendency to the production of more tannin; that is giving to it more alcohol. Is there not a bare possibility that such is the case by its presence?

Prof. Hilgard.—There is not any warrant for the supposition. Sulphuric acid exerts no special influence on the tannin so far as known, and I do not know that it is ever claimed that the plaster increases the tannin. It certainly does not increase its strength in the wine, that is to the palate. The acid holds out very much longer than the tannin. For instance, the wine containing twenty ten-thousandths of tannin and six pro mille of tartaric acid will exactly hold out when watered. With this proportion of tartaric acid to the tannin the one will disappear with the other.

Mr. Wetmore.—There is one point that ought to be brought out with respect to this checked fermentation, the difference that was experienced between white and red wine under the same temperature and same circumstances of fermentation. Mr. Crabb had considerable to do on that subject.

The President.—Will you favor us, Mr. Crabb, with your experience under similar conditions? Have you made white wine from the same variety as you made the red wine?

Mr. Crabb.—No sir, I have made white wine from white grapes.

The President.—That would not be under the same conditions. Did your white wine grapes ferment?

Mr. Crabb.—No difficulty at all with the exception of one or two tanks and those I fermented with fresh white wine must.

The President.—I may say that in our vineyards we have no difficulty with our white wine. The Orleans, which is a very poor fermenter, this year fermented out perfectly, in spite of the great temperature and much saccharine. I must confess however that I made my white wine principally in tanks in a cool cellar, crushed my grapes early in the morning between 5 and 7 o'clock. Those I picked I laid out for I had plenty of room, my cellars are cool, but I still had a bad fermentation with my Zinfandel. Then I re-started the fermentation but I lost my color as I had anticipated. I got them through but the color was gone.

Mr. Crabb.—I have had no trouble that way. They went through the second fermentation. In the first place they overheated, and that made the wine very dark, but when I crushed fresh grapes they seemed to make it all right.

The President.—I did not crush fresh grapes. Have you any other experience in the manner of fermentation of white wines, anything you noticed especially ?

Mr. Crabb.—Yes, I had two pipes of Semillon and Savignon at 30 of sugar. I crushed them in the morning and threw them into a tub and the next morning pressed them out, and put them into the pipes inside of the cellar and in three or four days they were milk sour.

Now in 1884 the same grapes, the same quantity and same rate of sugar, which were crushed, left over night and pressed out the next day there was not any trouble. Instead of putting the wine right into the pipes I put it into another open tub and let it stay 24 hours until the fermentation started and then scummed off the foreign matter from the top and in three or four days put it into the pipe where it fermented out quite dry.

Mr. Wetmore.—I have seen lots of wines fermented out at 30 per cent,

The President.—What, white or red ?

Mr. Wetmore.—Both. We have some in the office. One ran 16 per cent. alcohol.

Prof. Hilgard.—I would ask Mr. Crabb if he knows anything about the relative acid proportions of the wines of the two years ?

Mr. Crabb.—I think about the same as near as I could judge. Those varieties that I tested were about the same.

Prof. Hilgard.—It is exceedingly obvious in this year's fermentation that the most acid wines fermented out best. Wines of 16 per cent. alcohol, that Mr. Wetmore alluded to, I have found, and I have also noticed that many of such wines had as much as 8 pro mille of acid in their musts. They fermented out very qutckly and thoroughly, and have now 15½ per cent. of alcohol. The wines that fermented with 3 or 4 pro mille of acid only, seem to have had the difficulties in fermentation, for I have noticed that all such that came to me went down in tartaric acid to less than 4.

The President.—Undoubtedly there is one lesson to be learned and it is confirmatory of what was said at our last convention. It was supposed that we knew all about it, but some one suggested that we didn't know all about it and that we might have some difficulties yet to meet. It came the very next year and we will know more about it in the month of July, at which time the distilleries will be very active. (Laughter.) Unless you have something of interest to offer we will adjourn until this evening when the same subject will be continued by Capt. McIntyre.

The Convention was then adjourned until 8 o'clock, P. M.

EVENING SESSION.

The President on calling the Convention to order announced that the subject for the evening would be a continuation of that started in the afternoon, viz: the experiences of the fermentation of 1885. In announcing the subject he said:

To begin with I will call upon Captain McIntyre to give us some of his experiences. He has a great many and has kept a record. I do not find it necessary to introduce him. You remember him from last year. I have had occasion to refer to him fifty times during the year and have done it with great pleasure. His remarks read very well in print.

CAPTAIN W. H. M'INTYRE.

Mr. Chairman, Ladies and Gentlemen : In speaking to you of my experience during the vintage of 1885 I hardly know where to begin, or what would be interesting, or what would be required. I hardly know what to pick out from the mass of matter that came under my observation, that which would be of value to any of you. To say that any rule could be deduced from the observations that were made during the vintage of 1885 is almost impossible. I ought perhaps to tell you in the outset somewhat of the manner of fermentation in order that you may clearly understand the result as indicated from the note book that I have before me. Our wines are fermented in casks containing 1000 gallons each or about that. Our custom has been with red wines to fill the tank about one-third to one-half full with pomace. In white wines some have been fermented in tanks of this kind, others have been drawn out and fermented in puncheons, and others in packages containing about 450 gallons each. Our practice in such cases has been to about half fill each of these packages. In the early part of the vintage, in the commencement of fermentation, there was no trouble whatever. In turning to the record of fermentation during the first few days we find that all went through without exception and in from six to eight days. During this time the temperature of the grapes as they were

crushed was about 67 degrees, and that continued during the first three days of fermentation. We found that on the outside the temperature went up as high as 90 degrees, and it went through without any trouble at all. There is one that I find in my book which gives a record of 24 per cent of sugar for Zinfandel grapes, and in seven days it was dry, having passed through various temperatures from 67 to 90 degrees and falling to 81 at the close. The very next one is Mataro, starting in at 26 per cent sugar, crushed on the first day of October at 60 degrees and going to 92 degrees, and in five days and a half being dry, standing at 92 degrees and dry by saccharometer at that point. Of course there is some sugar yet remaining. But it went on in due process of fermentation carrying itself completely dry. The next that falls under my observation is also Mataro, which stopped at four and a half per cent with a temperature of 70 degrees and having been as high as 89 degrees. And so I can go on through the list noticing the different temperatures that occurred. And I know it is impossible to say from the temperatures that developed during the fermentations precisely whether a tank would go through or not. When I found a tank of wine approaching 90 degrees I regarded it as dangerous and took active measures to check it and long before it reached that, in fact my practice on starting was to stir the ferments three or four times a day and sometimes I kept a man continuously on the tank for the 24 hours, no cessation at all, a man kept at work all the time stirring the tank of wine. One peculiarity was noted that they seemed to be so completely wild that in using the stirrer made with forked prongs it seemed to meet with no resistance. Up boiled the pomace so that it seemed impossible to find anything more than if you were stirring water. And all this time the tank stopped, that was the peculiar feature that developed this year, and was more marked than ever before. That would continue not during one day but perhaps for two or three days, during the most violent fermentation.

At the same time or abont the same time we commenced to make white wine. We carried that on simultaneously with the making of red wine and it is curious to note the condition that prevailed. Our custom in making white wine was to crush the grapes alone in a receptacle called a receiver; let them stand 12 or 20 hours according to the temperature; then put them into another tank and allowed the fermentation to set in slowly, and took off any scum that would arise to the top during the commencement of the first fermentation. I also kept the mass well stirred to allow any sediment that might be there to fall to the bottom, and render the wine clear. I noticed, however, in some tanks in which I did not take this precaution, to draw the must from under the sediment, that a foam would form and rise to the top, and that went through with a very clear fermentation, even clearer than when they were drawn off the second time. The fact that they were drawn off from the tank, from under this scum or from the second receiver, seemed to arrest or stop it in a measure. I had no trouble with white wines, the fermentation was good and fair and without any trouble. In cases where I did not draw the wine from the tank or the second receiver, the fermentation was carried through rapidly and a high degree of heat was developed. In the case of Roussillon, crushed at 24 per cent sugar with an initial temperature of 75 degrees, and in five days afterwards it was dry, having been at 90 degrees, and was dry at 85 degrees, and in that case it was very remarkable, for it seemed to be very dry. A sample of Sauvignon Vert, crushed at 25 per cent with an initial temperature at 78 degrees, and in five days it was dry, having been only to 88 degrees. While this was going on the red wines just alongside were stopping, some of them with a temperature of 90 degrees, while others were going through with a temperature of 90 degrees. I find it here stated in the report that certain tanks went through and were dry, having been at a temperature of 90 degrees. I have one under my eye that started with an initial temperature of 66 degrees, with 25 per cent of sugar. It went to 91 degrees on the fourth day, and then fell to 85, remained at 85 for three days and then the next day was at zero with a temperature of 83. It seems therefore almost impossible to determine the phenomenon of rise of temperature, and whether it was the active fermentation that caused it to stop, or whether it was the heat developed that stopped it. It is hard to say what rule was followed, or whether there were one or more disturbing elements. The fact that we had white wine going through rapidly at a temperature at which the red wine stopped, renders it difficult to tell where the trouble was and what rule can be deducted for our guidance in the matter. I acknowledge I could not form any opinion, and could not say what I would do beforehand. I will say this, that the only successful re-fermentations that I found in the cases where the fermentations were checked was, by the addition of fresh must; not allowing it to stop, but taking it in time, if possible, and removing the wine from that tank on to the must that was just coming into fermentation. I found that it was much better to draw the wine from the tank on to must that had just started into fermentation than to put the new must into the old tank, and I could, with a less amount of grapes, carry on a fermentation successfully. If I crushed grapes on to the top of a tank that had stuck, I required more grapes. For instance if I had a tank that held four tons of grapes'

coming to a point where I feared it would stop, I crushed upon it one load of grapes of about 40 or 50 boxes. That was sufficient to carry it through; but if I had the grapes at hand, and could crush 25 boxes into the bottom of the tank, allowing them to get into fermentation and the next day pump the wine from the tank that had stopped on to this must that had just started in fermentation, the 25 boxes were sufficient to carry through the fermentation, quite as much so as the greater quantity when placed on the top, so that it seems to me that in using the grapes it is better to use them in the bottom of the tank and pump the wine on top. By that means I was enabled to carry on the fermentation with less trouble in furnishing new material which was a great consideration. So far as the handling of the wine was concerned, after fermentation, I racked it off quickly. It seems to me it was but the confirmation of opinions previously formed that it was far better to rack it immediately in those cases of rapid fermentation and high temperature and remove it as soon as it stops. I hardly know that anything beyond this, that I could say, would be of interest.

The President.—I would like to know if you have mixed the white wine with white grapes in these difficult fermentations?

Mr. McIntyre.—I did. The result was various. Sometimes successful and sometimes not. I was quite as successful in using the second crop Zinfandel as I was in using the must from white grapes; although I carried some fermentations through successfully by placing the must from the white grape to the amount of about 150 gallons in a tank and then drawing the other over it. In some cases it stopped.

The President.—In the cases that stopped had fermentation started in the white juice previously?

Capt. McIntyre.—In some it had and in some it had not. It seemed to be capricious altogether.

Mr. Wetmore.—What was the temperature of the cellar generally?

Capt. McIntyre.—It varied. It was a wooden building, and the temperature varied greatly with the temperature outside.

The President.—We had the experience of Mr. Crabb this afternoon, and I would like to see if your experience differs from his. In the case of the Sauvignons, did you draw off the juice from the top and the bottom sediment before fermentation was completed, or did you allow it to remain on the sediment?

Capt. McIntyre.—In this particular case I cited I did not remove it. It fermented with the two yeasts.

The President.—And it went through in what time.

Capt. McIntyre.—Five days.

The President.—And was pretty clear?

Capt. McIntyre.—Yes, very nicely cleared.

The President.—And dry?

Capt. McIntyre.—And dry.

The President.—That is capricious too.

Capt. McIntyre.—There could be no fault found with that of the two fermentations of Roussillon that stood beside it at the same time. It was with the Franken Riesling.

The President.—I would like to know whether you noted any difference as to a greater or less fermentation, more rapid or more complete where you left this yeast on the top or bottom, or where you drew off the juice, did you take it before or after the rise?

Capt. McIntyre.—I preferred to wait until the rise and then draw it.

The President.—Do you think that it is the better fermentation?

Capt. McIntyre.—It seems to me so. At all events it leaves it in better condition.

The President.—Does it get clear quicker?

Capt. McIntyre.—It seems to me it does.

The President.—Then the top and bottom yeast are left in the tank.

Capt. McIntyre.—They are left in the tank. And this as soon as it fairly comes to the top, so that we can see the cap is completely formed.

The President.—What did you do with those two yeasts; those remnants?

Capt. McIntyre.—We used them in fermentation this year to a great extent. We tried experiments with them. Sometimes we were very successful with our operations with this yeast, by putting it into a tank of red wine and starting up the fermentation with it, and carrying it through in some cases, and in others the capriciousness of the fermentation would assert itself.

The President.—The fermentation this year was not as fine as it was in years previous.

Capt. McIntyre.—It was very difficult, not as uniform, not as easy.

Mr. Portal.—Did you have more sugar in your must this year than last year?

Capt. McIntyre.—Very much more.

Mr. Portal.—Did you attribute that difficulty to the addition of the sugar or to the temperature more than to anything else?

Capt. McIntyre.—It seemed to me that the grapes were completely thrown out of balance by the heat, from the fact that the fermentation was so very good, at the outstart, when during the first days we were making wine, we had no trouble at all. We did not dream of trouble. It came upon us suddenly, and the grapes went up in sugar from 22 and 24 per cent. to 26 and 28 per cent. within two or three days.

Mr. Portal.—Then it was caused by the excessive hot weather?

Capt. McIntyre.—It seemed to me so. The Saccharometer showed the increasing sugar, but the grapes did not seeem to be deficient in acid at all, Zinfandel seemed to be normal, and as I had found it years before. The weather seemed to have thrown it all out of balance.

Mr. Portal.—Did you try this addition of water in this must at 28 per cent.

Captain McIntyre.—Yes. In a case of Malvoisie where I designed it for distillation I tried an experiment regardless of consequences. I added water and reduced the must from 32½ per cent of sugar to 21. The next day as there were some dry grapes, that had dried up by the heat of the sun, which had so far yielded their sugar that the must was then 26 per cent. I again reduced it by the addition of water. Fermentation went on for eight days and stopped with four per cent of sugar.

Mr. Portal.—With this must at 21 ?

Capt. McIntyre.—Yes.

Mr. Portal.—Were those grapes picked during the hot weather, or after it had passed ?

Capt. McIntyre.—Some were picked in the hot weather, but only in the cool portions of the day.

Mr. Wetmore.—Did you observe in the different cellars which you visited—I know you visited a good many of them—whether controlling the temperature in the cellar has much to do with the control of the fermentation ?

Capt. McIntyre.—It seemed to me not, it seemed to me that you could not, by controlling the temperature in the cellars control altogether the fermentation. In a certain degree it can be done, but not altogether. It did not seem to me that I found any rule of control that would carry through altogether the difficult fermentations.

Mr. Wetmore.—Did you see the tank that Mr. Wheeler fermented out of doors ?

Capt. McIntyre.—I saw it, but not at the time it was working—not at the time it was so extremely warm. I only saw it after it was through with the fermentation.

Mr. Wetmore.—He told me that the temperature in that went up to 110 degrees, with 36 per cent of sugar, and it went through.

Capt. McIntyre.—It stood in the sun. I recollect seeing it, and that the temperature had been at that point, as showed by the record on the tank.

Query.—Did you continue the regular stirring of the fermenting mass, while fermenting red wines until the fermentation was entirely over ?

Capt. McIntyre.—I did not usually. Where I found a tank would be dry or nearly dry, and the temperature had begun to fall, I did not continue the stirring, or stirred then only once a day.

Querist.—I found some difficulty in that very matter of stirring with must at 22 and 23 per cent.

Capt. McIntyre.—I had no trouble so far as the stirring was concerned. It seemed to have the effect, in many cases, of keeping down the rapid fermentation, so that the tank did not become unmanageable and cause a loss by boiling over. [Applause].

The President.—I will now call upon Mr. Portal for a few remarks. He comes from a different district and we would like to hear somewhat of his experience.

J. B. J. Portal.

Mr. Chairman, Ladies and Gentlemen—I did not take any notes to bring to you regarding fermentations that we had in our section. I will, therefore, have to speak in a general manner of what I have seen in our cellars rather than of my own experience, in course of which, I may mention a few of the circumstances that I noticed in regard to the increasing degrees of heat in the tank. There have been remarks as to the difficulties that occurred last year, which were not experienced before. I do not consider the quantity of sugar in the must, neither the temperature in the cellar is the particular objection in the fermentation. My tanks are larger than the size ordinarily used for fermenting tanks; they contain about 2000 gallons. I do not fill to the top in fermentation, but I put seven or eight hundred gallons of must in it. I found, by the temperature rising somewhat suddenly in 48 hours that the fermentation was going to stop sooner than others that commenced slower, but rose higher in proportion. For instance, I had one tank containing a blend wherein the sugar of the different grapes was 22 per cent. in the Mataro, 26 in the Grenache and 24 in the Carignan. I picked the Mataro a little sooner than the others, for I was afraid of the heat of the day, and of the degree of sugar in the Carnignan and Grenache; therefore I picked the Mataro a little sooner than I would have under other circumstances. The fermentation went through and got dry without any trouble. I had a lot of Zinfandel, and before the filling of the tank, the must had risen apparently to 80; the weather was warm and during my absence of an hour and a half or so, the men had brought the grapes from the warm side of the vineyard and crushed them together. There was too much sugar, and I reduced it with water to 23 per cent., and the fermentation went through all right. That was a small tank. Another tank of Petit Pinot started up suddenly at a higher temperature than I wanted the Pinot to ferment. I could not stop it, and I had to press new grapes to get a new fermentation. There were no reasons to guide me, and I had just to watch every one of them separately without having any concerted action for the whole. If I thought it was the high degree of sugar that was likely to produce mischief, I had varieties in the vineyard that were not so high in sugar. That was the reason for blending Mataro at 22 with Grenache at 24 and Carignan at 26, and they did very well. The intense heat was started in the centre of the tank. I had men to keep moving the must all the time, ventillating it as much as I could, and con-

tinuing the operation until the last day. With white wines I had no difficulty. I generally ferment them dry in the puncheons that I start them in. I do not ferment large quantities of white wine. If another season should come like the last, I would always aim to pick my grapes a little below recognized standard of sugar rather than above it. I think the bouquet of the wine is improved by it, and if by that we could regulate the ferments, it would be a considerable progress.

I have heard one gentleman, to-day, remark that he would not crush the grapes picked through the day the same day that they were picked. That is contrary to my rule of fermentation. I generally manage to crush all the grapes picked during the day. I do not pick any before the sun is up, and quit a little before sundown, so that they can be all crushed the same day. If the day is warm I tell the pickers to put the box in the shade, and that they should be put in the shade before the sun affects them much. If the temperature of the grapes is high, I would not crush them immediately, but I would not consider it a good plan to leave them until the next day. That is the practice I have pursued during the last year, and I had no difficulty except with one tank of Zinfandel, with nearly 30 per cent. of sugar, and when we drew it, it had five degrees and we had no more fresh grapes to put in. I brought a sample of it here. I think it was dry when we drew it last week. It was kept in the higher temperature, for I did not care whether I lost it or not. I took the chances on the thing, and you see the result.

The President.—I have quite a number of names of gentlemen here, who have their opinion about wine making, and have had some experience. I will call upon the Honorable M. M. Estee as the next speaker. He made some wine, and was quite successful in carrying it through.

HON. M. M. ESTEE.

Mr. Chairman, ladies and gentlemen :—I do not know much about making wine, not as much as I do about law, I hope I know more law than wine making, but I have given some attention to wine making for the last two or three years, This year I gave some personal attention to it, and I can tell you in a few words what we did. My cellar is located three miles from Napa where my vineyard is. My vineyard, excepting about 60 or 70 acres, is all rolling land, very rocky, and not very rich land. My cellar is a good stone cellar and my cooperage was new. I got the size of my fermenting tanks from Captain McIntyre, who was my architect. He recommended and I most heartily endorse his recommendation, fermenting tanks of ten feet across, and 4 or 4½ feet high, holding about 23 or 24 hundred gallons. I have had no trouble in fermenting, and I will tell you why I think I did not. In the first place, it did not get as hot at my place as it did up in St. Helena, but it did get very hot there last fall notwithstanding. In the next place, my cellar was a pretty cool building. It is against the bank, and the sun does not fairly strike it. It never got as hot as a good many cellars I have visited, and in fact most of the cellars that I have seen. In the next place, we sorted our grapes, that is, we did this: we did not adopt the plan that is usually adopted of picking all the grapes off the vine. We did not wait until some of the bunches were dry. I did not have so many grapes but what we could look them over a second time, and we did so, and we never crushed any grapes that were very hot. I think I had 5 or 6 hundred boxes, just from my own vintage, and we rarely crushed a grape if it was hot, and never crushed any that were picked in the middle of the day. We would have a hundred to 250 boxes stand over night, the next morning they would be, of course, quite cool. Then we would run them through the crusher and stemmer and fill the tank from 18 inches to two feet deep. I never had a tank more than two feet in depth of must.

The President.—Do you mean the juice and skins ?

Mr. Estee.—Everything. Never more than two feet, for we had plenty of cooperage and not many grapes. I was not buying grapes this year. I was just making up my own grapes, and was doing it in a way I thought would result in good fermentation. Then, we had racks to every tank, and these racks were pressed down on to the pomace until the liquids rose above it and were in that way fermented. We would take these racks out twice a day uniformly, for there was not any reason for taking them out oftener, and stir the must; and there was not much reason when they had gone down to 5 per cent. of sugar to take them out at all, but we did it, for we did not have many grapes, and had plenty of men. The result was we did not have any rapid fermentation, as did our friend Portal, that is, we did not get any tank through in 3 or 4 days or in 24 hours.

I have no record here, but I remember that our record shows that so far as our red wines are concerned, the fermentations averaged from 6½ to 8¼ days, generally about 7 days, and we never had a tank stuck; we never had the slighest trouble, not the slighest. I know one day that the top of the fermenting tank was a good deal above 80 in heat, for I went there, and was dreadfully alarmed, for I thought it was not going through ; I believe it reached 90, but I really cannot say, for I was so afraid it was more I did not want to look at the thermometer. I was afraid it was over-heated.

I left the wine on the pomace then from 24 hours to three days after it was perfectly still. Then we drew it off and put it down in the lower story. That is very cool.

Since then I have racked it twice ; that is my claret.

The white grapes were crushed just as we did the others and they were run into small tanks, I think about 2 feet high ; about that, isn't it, Capt. McIntyre ? He is the boss, I don't claim to know anything about it. We left them right in the pomace, I mean skins and all, the whole business always over night, and the next morning it would be just commencing to ferment a little and then we would draw off all we could, of course, and run the balance through the presses. I kept my pressed wine entirely separate from the wine I drew off. That is the way we did it.

I want to say I made several little experiments during the vintage. I had some must that was in fine condition. Only about 21½ to 22 of sugar. I put them in shallow tubs, not more than 8 inches high, and do you know it was 11 days fermenting, and never stopped either. I am satisfied you could put the must but two or three inches deep, and may be it would never ferment.

The President.—Keep on fermenting all the time. (Laughter.)

Mr. Estee.—Well, the point I am getting at is this, the deeper your fermenting tank, of course the greater heat accumulates, and produces a larger amount of carbonic acid gas. The center of the tank is not where the heat is, nor yet on the bottom, but on the top. I had a little tank of only about two feet deep, and there were five degrees of difference between the top and the bottom. I satisfied myself of two things during this vintage, first, if a man has a bad fermentation and cannot get it through, and if he is not as intelligent about it as Mr. Crabb or Mr. McIntyre or these gentlemen present who know all about it, I won't designate, if his wine does not go through but commences to spoil, I am satisfied that there is not any of us doctor enough to cure it. We had better send it to the distillery. That is the first thing I satisfied myself about, for I do not believe that the majority of wine makers are sufficiently successful in applying tannin or tartaric acid or anything of that sort to preserve it. When you have spoiled wine, it is like a spoiled egg, it is very bad. (Laughter.) You had better get rid of it by sending it to the distillery. Of course, I differ in that respect from my friend Mr. Wetmore, but Mr. Wetmore knows more about it than most of us, and he assumes that we are as bright about these things as he, and we are not. I therefore assume, as a matter of wisdom, that any wine maker, when his fermentation stops, and he finds the lactic acid in it, that it is turning to vinegar, he had better let it turn, or rather not that, but send it to the distillery, for the reason that he is sure to get the price of the alcohol that is in it, and consequently he is sure of maintaining his reputation as a wine maker, and the maintaining of his reputation is a great deal to a wine maker. (Applause.)

Every wine man is endeavoring to build up his reputation and especially in the last 3 or 4 years in making wine, and that raises our prospects of future success. I do not pretend to know a great deal about it. I study what books I can find, and talk with Mr. Crabb and Mr. McIntyre and Mr. Wetmore and every body else, and have driven all around my country to other sellers and talked with the wine makers to find out what they know about it. I averaged pretty well this year, and have got some very good wine.

I think the first step in wine making, if you allow me to lay down my creed, is cleanliness; the next is to clean your cooperage perfectly, that is the next and most valuable, especially when you are shipping wine. Next, I would add a uniform temperature as nearly as possible in my cellar. You cannot do it, I know, all through the heat of the day, but you can come near to it, and lastly, I never would attempt to crush my grapes when they are hot in the middle of the day, unless I was compelled to. Of course, if a man is buying a great many grapes and attempting to make two or three hundred thousand gallons of wine, he cannot make wine well. Excuse me, for I know there are some here who make that amount, but they cannot give that attention to it as can those proprietors who only make a small amount. It strikes me that in a year like this, when there is a great deal of sugar, say 27 or 28 of sugar, and your grapes come in with a temperature on the outside of 100 (and that was so this fall, I know) that it is not good to use them too quickly in some cases. Your grapes will go into the fermenting room at about 90 degrees, only about 10 degrees difference, just about 90, and you turn them into a tank, and in 24 hours you would think you were a steam engineer. It is roaring work, and no wonder that it stops. My experience teaches me to let the grapes remain over night. I know it is recommended in Europe to allow them to remain two or three days, and it is almost universally done for one day. The idea of crushing their grapes the same day they are picked is almost unknown in the districts where the best wines are made. Then, they always sort them, they never put in a dry grape, or green grape where they make good wine; in other words, the assorting of the grapes for the press in all wine districts of Europe is the great secret of making good wine, if I am rightly informed by the best authorities. Such a matter as assorting grapes in this country is almost unknown, of course we have a little apron where a man stands to throw out a club or the leaves, but as to assorting grapes, it is not known by me. There is one thing in this Heald's crusher, I don't know how yours are regulated, but a great many of them go at about 250 revolutions a

minute. Now when I started mine, I found the stems came through there almost as fine as the grapes, that is the stems were broken up very much. We put another belt on and reduced the revolutions to about 120 or 125 a minute, which is so slow apparently, that you could not do anything with it, but then the stems came out about right. My wine man said I was losing wine in doing so, and I suppose I did lose a pint of wine during the vintage, but notwithstanding that, the stems would be broken. Now, any gentleman that has made Zinfandel wine knows that it is important to keep out the stems. With Sauvignon or Pinot or Black Burgundy, when the grapes are ripe, the stems are dry, but with Zinfandel, the grape will be perfectly ripe, carrying probably 22, 23 or 24 per cent. of sugar, and the stem, except just where it locks onto the main vine, is as green as grass. Now, these little pieces of green stem going into the must give a bad taste to the wine. There cannot be any doubt about that. Now, my opinion is this, and I think Mr. Crabb adopted it, that you should have a stemmer with pretty small holes in it and no crusher at all. You need not be alarmed. There might be one that was not ripe come through then, but it will not be so macerated, and the bitterness produced by the juice of the green stems, such as we find in the Zinfandel, will never go into the tank.

I beg pardon for occupying so much of your time· [Applause.]

Mr. Portal.—About the equalization of the temperature in the tank, would not you think that stirring the tank would equalize the temperature, and that the tank would be kept nearly at the same temperature at the bottom and in the center.

Mr. Estee.—The stirring of the tank is the best thing you can do, and you cannot do it otherwise, unless as suggested by the putting in of ice.

Mr. Portal.—I would not like to put much into mine, for it takes too long to make the wine.

Mr. Estee.—During the fermentation there is a chemical change from sugar to alcohol, and the change, as I understand it is this, that the sugar is decomposed, it forms alcohol and carbonic acid gas. It escapes very readily and rises to the top where, of course, the heat is much greater than it is below.

The President.—What was the sugar in the grapes?

Mr. Estee.—In my Zinfandel, it ran from 22½ to 26.

The President.—Did you notice any difference in the fermentation of grapes containing much or little sugar?

Mr. Estee.—Yes; the lighter the grape was in sugar, take the Burger, for instance —that would not run over about 22, and there was no difficulty in fermenting that. I think if my grapes had run to 28 or 29 I would have had the same trouble as anybody else.

Query.—Do not you think that your success in fermentation comes from having so small an amount in your tank, that you did not get any higher temperature?

Mr. Estee.—I think it is from three causes ; first, I never put in any grapes that were red hot—if I may use the term ; next, I never filled a tank over about 18 inches or 2 feet, and lastly, my cellar was a very clean cellar ; it is a stone cellar and close up to the ground.

Mr. Wetmore.—There was one thing that you did, however, that had considerable to do with your success. I was thinking of it at the time when you were working, that is, in putting in your rack, you forced your pomace pretty near to the bottom.

Mr. Estee.—Yes, I did so. I do not think I have anything more to say. Thank you kindly for your attention. [Applause.]

The President.—I see a gentleman here who is turning new energies into the wine trade. I am going to call on Mr. Wm. T. Coleman for a few remarks. [Applause.]

Mr. Coleman.—I have nothing to say.

The President.—I would say that in the next few vintages, we need some of the energies of capital that can be wielded by just such men as Mr. Coleman, for the wine merchants of California can not do more than they are doing.

MR. WM. T. COLEMAN.

Mr. Chairman and gentlemen.—Being raised on a farm in Kentucky, I could respond to a discussion on corn and do it justice, for I have a limited knowledge of small grain and the corn fields, but when you ask me to discuss the subject of viticulture, I must confess that it is entirely beyond my knowledge and my province. I have tried to utilize some land and do some good in planting vines near San Rafael. I am entirely ignorant of the subject and am groping in the dark, not having time to read up as I would like to, and I am asking questions of my friends and neighbors. I have had a father-professor in Mr. Wetmore, but he has deserted me, and when I needed him most. I have planted a few hundred acres of grapes, mostly without intelligence, without much system, but I hope when it is up, it will do some good. I am getting the best cuttings I can, rooted vines, and preparing my ground as I have heard is the best way to do, and having planted corn and grown corn and other things, I know something about planting ; that is all. At some future time, I may be able to say something upon viticulture and winemaking, and it would then afford me much pleasure to do so. In the meantime, I am an anxious, earnest and keen listener. [Applause.]

The President.—I hope gentlemen you will warm up to this subject, and get a little of the warmth that the grapes could have spared. I will now call upon Mr. L. D. Combe.

MR. L. D. COMRE.

Mr. President, ladies and gentlemen.—I do not think it is fair to taste the good wine first and keep the best to the last. The idea of calling the young orators to this platform after the distinguished gentlemen that have proceeded us. It is hardly calculated to bring us into our self-confidence.

I have it in may mind to make a few remarks upon fermentation, and I shall cancel those that have been treated upon by the gentlemen who have preceeded me. It has been my aim during this vintage to be careful in observing any deviation from the usual results in fermentation. I did not consider it uecessary to bring notes here, for the few I have made, I have fixed in my memory. The distinguishing feature that I wish to bring to your attention is, that in my experience, I had some difficulty in carrying the fermentation through, notwithstanding the percentage of sugar was below 23—22½ to 23, and not exceeding in any case 23½. I have made up my mind since then as to the cause of this disturbance, and though I may be classified as showing a little ignorance, in this respect I shall submit, if my ignorance at the time may be of benefit to others. The first difficulty I had in fermentation was with a tank of grapes mostly Zinfandel. The first two tanks that I fermented I was very careful in having my grapes at 65 degrees temperature. Those grapes that arrived at the winery after 12 o'clock, I was very particular and let them stand over until the next morning. The first two tanks did not ferment immediately, and did not commence fermenting until 24 or 40 hours after they were in the tanks. In separating the grapes, I found some that were not as acceptable in quality as I desired to put in. I put those to one side, intending to make a different tank of wine from them. Some of those remained in the winery 48 hours, and some 24 hours. Those grapes I put in with some that came in in the afternoon of Saturday. Those that came in in the forenoon, were put in the tank at 65 degrees temperature, and those that came in in the afternoon at 70 degrees. This tank started promptly the following morning, and in fact it started as soon as the two former ones. I was very particular in ascertaining the temperature of the tank. The temperature of the cellar was favorable, being from 65 to 70 degrees, and in order to ascertain the temperature in the tank, I used the alcoholmeter, and for that purpose I placed it below the pomace, so that the ball of the alcoholmeter, which in this case answered for the thermometer, reached into the liquid below the tap. In this way I secured in my estimate the highest temperature. I noticed in the first tanks that were fermenting properly, that it rose gradually up to 90 degrees, and no further. They reached 90 degrees only on the first day, while the third tank that had received some grapes that were kept over, and had also received some at 75 degrees of temperature in the afternoon, rose up promptly to 80 degrees the second day. It started in on the sixth of September, and on the 7th it was up to 80, and on the 8th up to 90 and 95 degrees, and with this third tank was myfirst difficulty. Istirred it 3 times a day. On the following Saturday, I calculated that the fermentation must be nearly over, and testing it with the saccharometer, I found three degrees. I did not consider it necessary to continue stirring of the surface, and put on the false buttom, intending to keep the air out or most of the air out. I covered it almost entirely, and I think that the fact that the cap was not stirred must have stopped the fermentation. At that time the fermentation in the cellar did not rise above 80 or 75. I do not think it ever went over 75 during this fermentation. Now, the question with me was, whether it was due to the high temperature of the grapes that went in or simply to the fact that it should have been stirred one or two days longer. I allowed the cap to remain without stirring. It had been fermenting fully five days. It was for that reason that I asked Captain McIntyre whether he kept on stirring to the last.

In the course of the remaks that were made here last year, or rather the year before, it was hinted that it was not a good plan to allow the air to go through pomace after the fermentation was over, and as I was not able to remain there to superintend the matter, I let it alone from Saturday to Monday, and when Monday came the wine was exactly at the same percentage of sugar as it was on Saturday. That wine remained there three days longer when I drew it off, treated it with fresh must and had no difficulty in carrying it through. The wine was tasted to-day. The second difficulty I had was in two tanks I had in the cellar which were straight Zinfandel. Ours is such as a hundred cellars, it is not as good as Mr. Estee's, and the temperature rose pretty high. But still the stoppage of the fermentation was not due to the amount of sugar, for that lot of Zinfandel did not exceed 22 per cent. I have been alarmed at allowing the Zinfandel to get over-ripe, and as our wines are rather strong and heavy in color and body I preferred to make a lighter wine. My impression in regard to the grapes was, that it is no damage at all to let them stand over night, at least until the morning. I found that, notwithstanding I kept the grapes in the shade, I had exactly the same temperature when the must was crushed as the temperature of the cellar was where the crusher stood, 80 if the cellar was 80, and I consider it a dangerous proceeding to introduce the grapes at this temperature. I think it is a matter that should not be left to our taste or judgment to ascertain the degree of

moisture or to feel them to ascertain their temperature. We should have an instrument at hand and not take any chances. I think in that way we may remove many difficulties that beset us and attain better results.

The President.—I will now call upon Mr. William Pfeffer of San Jose to make a few remarks.

Mr. William Pfeffer.

Mr. President and Gentlemen:—I am not much of a speaker. As there is so much talk of the difficulties of fermentation during the last vintage it might look curious that it never happened to me to have any difficulties. The fact is I never made wine in big batches. I have made a good many batches of wine, but always on a small scale. For the last two years I have worked up all the grapes that I raised myself in a kind of closed room. Before that I made my wine outside, in the open air. I observed this as long as I was making wine outside that generally when it was well under fermentation it rose in a foam a foot to two feet high during the day time. Towards the early morning that subsided and there was hardly any of it to be seen. The fermentation never stopped but it slackened a good deal. Since I fermented in a close room, where I have had pretty good control of the temperature, I notice that there is none of this foam on my tanks. It is the violent fermentation, I believe, that has caused it. Last year, as well as the year before, I even was obliged to make a fire to get my first batch well under way. There must, of course, be a great difference between my location and others. I believe that a cool place to ferment wine in is, at any rate, better than where we cannot control the temperature. When I made my wine in former years, I generally put a cover on the top, as soon as I was done crushing the grapes, and fastened the cover with some kind of cleats to keep the pomace down, when it would rise, below the must. I never did any stirring. I thought I could make an improvement in that matter, and this last vintage I only used the cover on the top of the pomace after I was done with the crushing, but removed it, took it off sometimes four times a day, and gave the pomace a good shoving down. In that way, I believe, I cannot only make a fermentation quicker, but in a better way. I think I get more color and more tannin out of the grapes. I always stem my grapes, no matter what time of the season it may be, I pick out every one of them. I do not think that if there is any tannin in the stems it will do our wine any good. On the contrary, I think it will have a bad effect on the wine, and in after years spoil the color.

As I never had any difficulty about fermentation I was thinking a good deal about it, and what the cause might be with others, and I have come to the conclusion that the difficulty must not be only in the too warm atmosphere surrounding the fermenting tank, but also in the grape itself. Not on account of any lack of ferment, but in too large an amount of sugar. This, I believe, we should try to prevent instead of trying to cure the mischief. I have never met a wine-grower, but would think just about the same as what has come into my mind as to this matter. I believe that when we raise a grape on certain spots and there has happened to be any difficulty in fermentation that that grape is not suited to be grown on that spot. Take for instance the Zinfandel. If the Zinfandel cannot be fermented dry after it shows more than 22 per cent. of sugar, then I believe the Zinfandel grape does not make any good wine, and secondly the ground where it was grown is not suitable. I believe, on such places, should be planted a later ripening variety. We may have to make a radical change and fit every variety to the spot where it is suited. That requires a good deal of experiment, but we have to do it. I think it always better to prevent trouble than cure it. Grapes that always cause too much trouble in fermentation, they get too sweet, and when they get too sweet, they lack the necessary amount of acid. The question then arises, how is it the grapes get too sweet? I think one cause is the way that we plant our vines. I think we make a mistake right at the start when we plant a vineyard, we plant too far apart, and that gives the vine too much space to feed on and keeps the vine too vigorous in growth, and the reason is that grapes are apt to make more sugar in proportion to other ingredients. If we were to plant our vineyards the same way as they do in the old country, even then we would run some risk because our ground is richer. We have a more stimulating climate, and that gives more sugar, but not enough of other qualities that are less bothersome in fermentation. I think also in the way we prune our vines in California, we are radically wrong. I have observed that as I prune a vine short I get nothing but wood, the grapes I get are too well developed, and you all may remember the remarks published some time ago in the *Chronicle*, that the French were passing remarks on our complaining that the grapes were too sweet. The answer was that we should prune close to the ground. They understand better than we do how to keep their vines in subjection, and the grapes they grow are only about half the size of what we have here, consequently they have in their grapes more of the stuff that gives their wine a bouquet and flavor, but not so much alcohol. I believe that we ought to plant closer than they do in the old country and give more attention to pruning, and grow our grapes not so much as table grapes, but as wine grapes. I have planted within the last month, a small

patch with vines six feet by four and four and one-half feet apart. Some might try the experiment of planting close, for I am confident it will turn out better than those that are planted seven and eight feet apart.

Mr. Portal.—As you have been pressing your must this year, I would ask if you find any material difference in the color of your wine?

Mr. Pfeffer.--The wine I made this year, the pressed wine, is of a darker color than last year.

Mr. Portal.—Do you attribute your success to the pressing of your grapes, and the stirring of them ?

Mr. Pfeffer.—I attribute it to these: Fermenting in the cellar, I notice while it boils it does not make the foam it did outside, and I think the coolness of the temperature would have something to do with it.

The President.—What do you understand by short pruning?

Mr. Pfeffer.—What I understand by short pruning is where you leave but one eye to one spur and save from three to ten spurs on the vine.

The President.—Now, what would you call it to leave four eyes on the spur, and five or six spurs on the vine ?

Mr. Pfeffer.—I think it has about the same effect. I observe this, if I prune a vine too long, say with canes about three feet long and leave only two spurs with two vines I just get that amount of wood that I want to have for pruning wood for next year, and the wood that grows on the spur again I keep in subjection by pinching during the summer time. In this way I get less wood, but more fruit, although the grapes do not make such size on my long canes as when I was pruning short, I believe the quality of the grapes is better. Another thing, I think that if I prune a vine short, I always keep it more or less in a young state, and we know that a young vine does not make such a good quality of grape as an old vine. By planting eight feet apart, and short pruning, we keep it in vigor. The quality, I think, is better on a long pruned vine than it will be on a short pruned vine.[Applause.]

The President.—I must say that I am exceedingly pleased in having met a person who expresses my ideas in the planting of a vineyard, and the difference in pruning as affecting the quality of the fruit, also in the choice. Just now, in a vineyard in which I am interested, I am experimenting with about 30 varieties of grapes, which, following out the idea of Mr. Pfeffer, I planted for the purpose of selecting as many as I can. I have planted the Madeline, which ripens absolutely ripe and sweet before the 4th of July, and also the latest grape that I know of, the Verdal, which is later than the Orleans, which is considered to be one of the latest grapes that we have in California, and have planted varieties that ripen at various times between the two extremes. I thus hope to escape the sun burning and find a grape that is adapted to the soil. In spite of the late ripening of the Orleans, it gets sun burnt every year, and you will understand that when the leaves are off the vine and the fruit exposed to the sun. Where it is coolest, on the porch we have an average of 105 degrees, and it takes a pretty good grape to stand that heat. They dry up so that we have every year more or less fruit lost. Zinfandel comes in somewhat earlier, but we generally get pretty good results from it, although it ripens too quickly, and not having a large quantity we manage to get this in, but we ought to have other varieties, and I think the principal that Mr. Pfeffer has stated in such practical words is correct. If the grape does not ripen to suit your requirements, you had better get another.

We will now here from Mr. Smith.

MR. E. B. SMITH.

I have not had much experience of the present year, and that is what we are discussing. I only made a small amount of wine from my vineyard, and have some of the product here. I had no difficulty in fermentation, although I anticipated it, and because I anticipated it, I pursued the plan with most of my red wines, of mixing a little Burger instead of reducing the amount of sugar by water. I had 26 or 28 per cent of sugar in my Zinfandel, and I tried some of it, and carried it through by adding new must. After that, I added from 5 to 8 per cent of Burger with my Zinfandel, and reduced the must to about 25 by that means, and my fermentation went through well, not a very rapid fermentation, but it went through in about 6 or 7 days and was perfectly dry. I tried the same thing with my Golden. Chasselas, which was about 26 or 27 degrees of sugar, and with an equally satisfactory result, although as I believe it has been generally remarked that there has been very little difficulty with white wine, but I anticipated there might be, and took that precaution. I do not know that my experience would be of any particular value to the gentlemen here. I believe, as the last speaker said, that we should experiment and ascertain which is the best kind of grapes for a given locality. I know that while I was making wine at Cordelia, there were two varieties in the vineyards of that vicinity, with which I was almost always sure to have bad fermentation unless I blended the grapes. The soil was a clay soil which seemed to produce too much albuminous matter. Then after fermentation was through they did not clear, and the only means that I could adopt to make them clear, was to blend them with grapes from other localities, where there has been any difficulty experienced in fermentation, their grapes should be procured and experimented with, to see if another kind better adapted to the locality could not be procured.

There was one matter that was spoken of by Mr. Estee, that I think is of great importance, that is in the stemming of the grapes. The stemmers that are now used, break up the stems so badly that we get a large amount of stems ground into the must, and that must necessarily have a bad effect on the wine. I have tried to get some of these machine makers to make a machine that will stem the grapes before they get to the crusher.

The President.—Have you seen the Washington? I am using it.

Mr. Smith.—I have, but have never seen it in operation. I do not think that the grapes ought to be crushed before they are stemmed.

Mr. Portal.—What degree of sugar did you have with the Burger?

Mr. Smith.—About 19 per cent. The temperature never arose above a degree which I considered safe in all the grapes that I fermented after I had blended with the Burger and it took about six or eight days to carry it through.

The President.—I think you will find Mr. Smith's experience hold good, that the way to get these difficult red wines to go through will be to take the juice from grapes that ripen later and have not as much saccharine in them. You will then throw away the water and get proper ingredients, especially in white grapes. You can have Folle Blanche, Burger, Verdelho and a host of others that usually would make light wine and not very good, but would mix exceedingly well, and I think that would solve the problem under all circumstances.

Mr. Smith.—My Zinfandel had a higher color after using the Burger than it had before.

Mr. Combe.—How will two such grapes act on each other?

The President.—Usually the white grapes are more active than the red or even the black grapes.

I will now call on Mr. de Turk, who is a large wine grower, eminently successful, and is also an unfortunate member of the Commission.

MR. I. DE TURK.

I thought I had been heard often enough to be overlooked this time, but as this is a kind of a love feast, where all are to give their experiences, I have to take my turn. I will commence like the balance of them, at the beginning. I may state that I ferment my wine in two-thousand gallon tanks. At Santa Rosa I have had very little difficulty, while up at Cloverdale I had some difficulty. I crushed my grapes with Hill's crusher, and put them into the tank at all times of the day. I am compelled to do that for, as you gentlemen know, in a large winery we can not stop to select our time. I had men assorting the grapes as well as I could, bunches and clusters were thrown aside. While I selected to some extent, it was not as thorough as I would like. My cellar, like that of Mr. Estee's, is much cooler than any of the surrounding vineyards, and I think that is one element of success, although it got pretty warm there last year. I had some grapes that went up to 32 in saccharine, but my average was between 23 and 24. I experimented in stirring the grapes, and also without. I am favorably impressed with the process of stirring the must when it is fermenting, and I believe that is generally acknowledged by all those who have given their experiences this evening that it is valuable, though I have made a very good wine by simply keeping the perforated cover on, and submerging the whole must. I do not know that there is a great deal of difference, only I am satisfied by stirring the carbonic acid gas will go through and go off quicker. Another thing I did in my cellar which may have helped my fermentation. Every evening I steamed my crusher and receiving vessels, and that left a moisture and steam in the cellar that kept it from getting so extremely dry as it would otherwise have done. I do not know that I would have thought of this but there was a doctor who made the remark that it had a beneficial effect and kept the germs of fermentation afloat in the air, as he called it, and kept them alive. I do not know whether it has any effect or not but at any rate I do not think it did any injury. I always use steam in keeping up my machinery, and with the steam you can clean much more thoroughly. The force of the steam through a hose is equal to blowing off anything that is left on the crusher, and any remaining stems.

I don't think that I can add anything to what has been said here. At Cloverdale, the fact is, I had some wine that did not go through, it still remains sweet. Whether it will turn sour in the spring or not I cannot say.

The President.—What was the saccharine matter?

Mr. de Turk.—24 to 30.

The President.—Do you know what the temperature was?

Mr. de Turk.—I cannot say, although it was extremely high.

The President.—Did you try any experiment?

Mr. de Turk.—I stirred all the grapes, and stirred them continually.

The President.—Did you mix any other grapes?

Mr. de Turk.—I tried one lot of about 6 or 8 pipes wherein I mixed Grosser Blauer with Zinfandel. I will say here that I think our remedy for getting through with these stubborn wines is smaller tanks. Shallow tanks will give better results than deep tanks. You get more efficient fermentation and avoid the difficulty of extreme heat; the carbonic acid gas that has to work its passage up through 6 feet of moisture cannot escape so rapidly as through 2 feet. With

the shallower vat you can get through easier.

The President.—You can make these tanks of greater diameter. That would not influence the heat. I find no difficulty in fermenting my white wine. I usually crush my grapes for the white wine, and leave them in the tank until there is a slight fermentation set in, and then I press them and run them into a puncheon and they ferment splendidly. At Cloverdale I fermented in tanks, and it is not so good. Another thing I noticed at Cloverdale is, that the wine I put in puncheons came out better than the wine I put into the two thousand gallon tanks. The must is so deep it can not cool off fast enough.

Mr. Wetmore.—You had some experience in making Tannic wine?

Mr. De Turk.—Yes; I had no other grapes than the Zinfandel. Those are the best I had. After the fermentation was over no saccharine left in the pomace, I took the puncheon's heads out and filled them full of pomace, and then added XXX spirits and covered it completely, and I find it is excellent to feed the wine with, it extracts all the color and tannin, and is a fine article in place of cherry juice. I only made a few puncheons full, and I am favorably impressed with it. I think by taking the finest grapes, as the fine claret grapes, the article will be much finer than from the Zinfandel.

Mr. Estee.—In Europe they ferment the skins over twice.

Mr. De Turk.—I will give you my opinion of the cause of this imperfect fermentation. I do not know that it has been touched upon, and I do not know that I can state the fact, but it will set you to thinking. I read, I don't know whether it is Pasteur or some other author, but I read it in some of my works that the inside of a grape was extracted and put in a vial and closed up, and without any skin of the grape, and it remained in that condition. They took a few drops of water, and what was on the outside of the grape and introduced it into glass vials and fermentation set in. This went to prove that the germ is on the outside of the grape, or on the skin of the grape. Now, my opinion is, that the difficulty that arose during this last fermentation is that, it was the heat that destroyed the skins, and with it the fermentation of the grape before it gets to the cellar. If you get a full sound heavy grape in the cellar that has not been scalded your fermentation will go through without any trouble. That is not new, but there are a great many of you are new in the business. I remember the time very well when every cellar in Sonoma and Napa counties was filled with milk sour wine. You remember in 1880–81–82–83–84 we had a series of cold years, but previous to that we had hot years, and when we had them we had plenty of milk sour wine. This has revived the questions that were talked about then. We then attributed it to mismanaged cellars, poor quality, cooperage, etc.

Query.—Do not you find that in a rainy season fermentation is much more active than with a long continued dry season?

Mr. De Turk.—Yes; in a rainy season like 1884. The fermentation then went through rapidly. The grapes were low in saccharine.

Querist.—My experience has been that it was slow in a dry year and in a rainy season it became more active, and I have explained the difficulties that occurred this season, in which, however, I did not suffer by the long continued drought, the grapes having a sort of unnatural ripeness, and they are without life and vigor.

Mr. De Turk.—I think myself the grape matured in an unnatural way this last year. They seemed to mature at once—in a few days; whereas, if the weather had been a little cooler they would have had two week's to mature in. [Applause.]

The President.—We have amongst us a person of considerable experience. He is manager of a large wine cellar here. I will call on Mr. Rose, the manager for Mr. Scheffler, to address us.

MR. ROSE.

Mr. President:—I am entirely unprepared, and as you well know, my system is different from the system adopted so that it will be quite difficult to explain about it, but I will ask if you will permit me, to find out a point about this sweet or interrupted fermentation. I would like to ask Capt. McIntyre in the case of the e interrupted fermentations how much alcohol was reduced during the 24 hours previous to the stopping of the fermentation.

Capt. McIntyre.—It varied greatly, so much that I could not give you the data.

Mr. Rose.—How many degrees of sugar had been lost in the 24 hours?

Capt. McIntyre.—I find, on reference to my notes, that the saccharine matter fell from 20 or 22 to 14, even to 10 in 24 hours.

Mr. Rose.—In my practice I never had a chance to observe this checked fermentation, but this year I got one chance with Zinfandel, in which the grapes had 28 per cent. of sugar, and when I tasted it the next morning it only had 8, so I thought that as in making sweet wine we used that amount of alcohol to check the fermentation I thought that amount of alcohol had checked it. I did not wait for anything further, but pressed the wine through and it took me eight days more to get out the eight degrees that had been left. I therefore think that the real stopping and checking of the fermentation is the extreme and sudden developement of alcohol. I would like to ask a further question of Capt. McIntyre. how he took the temperature?

Capt. McIntyre.—We aim to take an average temperature.

Mr. Rose.—How did you get it? Did you put the thermometer in the liquid under the cap or did you take the thermometer right on the cap?

Capt. McIntyre.—We calculated to get the thermometer right down near the center of the tank, as nearly as possible and frequently used a self-regulating instrument.

The President.—There are a number more gentlemen whom I would like to call upon, but it is growing late, and there will be an ample opportunity for discussion on this subject before we adjourn this Convention.

I will announce that to-morrow morning sampling will be continued with this difference, that there will be special attention given to the experimental samples that were made under the auspices of the Viticultural Commission, and the wines that were made in Mr. Crabb's cellar and others. In the afternoon there will be a report from the State Analyst, Professor Rising, to the Commission, and there will be a discussion on the experiments of the Viticultural Commission, and there will be a microscopic observation made on the various germs of disease. Those who desire will be shown the various disease germs, the fungoids, the mycoderma, lactic acid, etc.

The Convention was then adjourned until the following morning at 10 o'clock.

FOURTH DAY.

AFTERNOON SESSION.

Thursday, March 18, 1886.

In the absence of the President, Mr. C. A. Wetmore, Chief Executive Viticultural Officer, called the Convention to order. In doing so, he said:

"The subject for this afternoon is that pertinent to the work of the State Analyst, Professor Rising. The work of the State Analyst in connection with this Commission and also the State Mining Bureau, and State Board of Health, is probably very soon going to assume great importance, especially in connection with our work in regard to spurious wines. The analytical work in connection with it is partly experimental, and partly has reference to the mercantile products of our country, at least those that are in commerce. The work is only just startiug, but the report, I have no doubt, will be interesting so far as it has gone. I now call upon Prof. Rising."

PROFESSOR W. B. RISING.

Mr. Chairman, ladies and gentlemen:—The work of the State Analyst has been for the most part analytical, so that it would not be in place to-day to give any detailed account of that work, the most that I can do is to make a running comment on some of the work, and give you some idea of the class of work which has come under my observation.

Among the analyses which have been asked of the State Analyst, I will mention first a number of so-called preservatives. We have found one, for example, composed almost entirely of spirit, another of bi-sulphite of potash with boracic acid. Three samples of grape juice which has been preserved have been found to have been preserved in salicylic acid. These are samples of so-called preservatives which have been presented for analysis.

Of coloring matters several samples have been presented which have been found to be analine colors.

The Commission has submitted a number of wines, and many of them were experimental wines and special determinations were asked for. Those I will pass over entirely. The Commission has undertaken the study of a number of the best foreign wines with a view of comparing them with those of our own production. We have taken the best foreign ports made a complete analysis of them to determining the alcohol and sugar. The solid residue at 212 degrees the ash, soluble and insoluble, tannic acid, volatile acid, tartar glycerine. These are the principal determinations which have been made. It is too soon to give any comment on these wines. Their results can be made the basis of further study and comparison with our own wines.

Experiments were made on different wines of this State, plastered and unplastered. A number of experiments of this sort have been submitted for analysis and the results are varied.

Some wines which were sent from the East and which we believed or suspected to have been made not from grape juice but with artificial substances have been analyzed and there seems little doubt but that they were artificial wines. The Catawba, for instance, yielded 40 per cent. sugar, total solid residue, without a trace, or hardly a trace of cream of tartar. The alcohol or brandy, distilled from the wine, had nothing of the true brandy flavor, in fact the whole analysis and comparison of the wine indicated that it was a spurious wine.

A sample of port of the same manufacture and sold for medicinal purposes resembled very closely the Catawba. The three samples, Catawba, Port and Sherry, we were compelled to pronounce imitation wines.

The State Analyst was invited by the Commission at the time when a good deal of discussion was had in the papers, in regard to the possible danger to grapes from the use of arsenic, employed for the purpose of exterminating the grass-hopper. I visited one of the regions where the arsenic had been used most freely and made personal examination, and reported at the tim

the result of that examination to the Commission. It was to the effect that no appreciable danger was to be apprehended from the use of arsenic. I will take a few moments to state the matter a little more fully, than was given at the time, the reasons for that conclusion.

The method in which the arsenic was applied was such as to preclude any probability or even possibility of the arsenic being carried by the wind and being lodged on the grape bunches, That was the point really at issue, whether the grapes by any means, either from the action of the elements, or whether carried by the insects, or any other way, could have been touched by the arsenic, whether the arsenic could have been deposited upon them or in them. I say the manner of applying the arsenic precluded the possibility of the wind carrying it, for it was mixed with bran or middlings, and syrup or glucose, so lhat it was hardened into almost a stiff paste or cake, and this was usually placed on a shingle or shake and laid about the vineyard. There was, therefore, no appreciable danger of it being blown about by the winds.

The next question which arose was in regard to the danger of the insects, the grasshoppers, carrying this arsenic and depositing it in any way upon the grapes. In a few instances I could see that the grasshoppers having lighted upon this paste had crawled alterwards on to the leaves of the vine, and their tracks could be easily seen because the arsenic destroyed the leaf wherever it came in contact with it, and in this way anyone would be able to trace the grasshopper as it crawled over the vine. But this was seen in only a few instances, and I do not think I was able to confirm a single one in which it had reached the berries. There was no indicatton of vomit being left on the berries, and in studying the habits of the grasshopper, and inquiring from those who were on the ground, I feel there is no danger from this source.

I found, however, that where the grasshoppers were most abundant, where their ravages were the greatest, that they had left a certain amount of excrement on the leaves, and when in the vineyards, I was afraid that this might be a source of danger; but a careful analysis of a considerable amount of this excrement which was collected, showed not a trace of arsenic, and the habit of the grasshopper, as gathered from those who watched him most closely, is that immediately upon eating the paste he sought the shade, and in confirmation of this, it may be stated, that the dead grasshoppers, without almost exception, are to be found under the vines, or under the clods at the foot of the vines. In no case was the grasshopper found in the sun. It seems immediately on eating the arsenic, he felt the effect of it and retreated to the shade, or the water, if there was water close by, and died very quickly.

Three samples of grapes were taken from a place where the arsenic was found most abundant. Thirty or forty pounds were taken for exact samples, and then submitted to a chemical analysis for arsenic, and the result was that we were able to report no appreciable danger from arsenic to the grapes.

I will add at this time a few words of the danger to the soil, and to the wells that may arise from the application of the arsenic. Can plants take up arsenic, assimulate it, and afterwards when the plant or the fruit of the plant, becomes the fruit of man or animals, is there danger of poisoning from the arsenic which may have been taken up by the plant? I found upon studying the literature of this subject, that it had been carefully investigated by chemists at different times and in different countries. Careful investigation had been made at the experimental station in Germany, where arsenic was applied to plants. A certain amount may be taken up by certain plants. That seems to be the most that can be said. Yet the amount is small, for the plant is extremely sensitive to arsenic, and if any appreciable quantity is supplied in the food of the plant, the plant immediately withers and quickly dies from the effect of the arsenic. So that the danger is to the plant rather than to the animal which may afterwards consume the plant.

As a further confirmation on this point, arsenic is known to be present in certain wells in appreciable qualities, yet the healthfulness of the water from those wells has never yet been questioned. The mining Director in the Grand Duchy of Baden, had noticed that iron ores which came to him from certain localities for analysis were always impregnated with a certain amount of arsenic. He set to work and investigated the matter, and went from the iron ore to the iron springs, and he found that the iron springs, including some of the most famous, contained an appreciable quantity of arsenic—Weisbaden and other springs showed arsenic. And in looking over the results of the Analysis of Springs, of the Grand Duchy of Baden, published by professor Benson, I find that every spring, or all that can be called iron springs, contain a trace of arsenic. An analysis of the soils of the Grand Duchy of Baden showed that those containing an appreciable amount of iron, also contained a trace of arsenic, showing its wide distribution in that Department at least, and the conclusions of the analysis of the mineral waters of the world will show that arsenic is very frequently present in those waters. If it has not been recognized in all cases it is due to the fact that special examinations have not been made for it. For it is only where a special examination has been made for arsenic that it will be found. As a still further confirmation, the boiler crust of a steamer plying from Cologne to Bingin c

the Rhine, was found to contain an appreciable trace or presence of arsenic. So much then for the wide distribution of arsenic. The experience up to this time is that the plants do not contain any appreciable amount, or any injurious amount at least, of the arsenic.

A word more in regard to the possible danger of contaminating wells. Upon this point I hope to continue a few experiments not yet concluded. Yet there have been experiments enough made to justify a statement of this sort, I think. Where a small quantity of arsenic was mixed with the soil and then bleached with water, the greater part of the arsenic was retained in the soil. In the case of iron soil I think we can affirm very positively that the arsenic will be entirely retained in the soil. In the case of calcareous soils the greater portion of the arsenic will be retained in the form of arsenic calcium.

This gives a brief synopsis of the work that has been performed in the State Analyst's office. I should not do right if I did not acknowledge the services of my assistant, Mr. Grandjean, who has been so active, and willing in the work of the office.

Mr. Wetmore.—Are there any questions connected with this subject, that has not been introduced by the State Analyst?

Prof. Hilgard.—He spoke of analyzing some Ports. I would like to know what he found in the way of tannin and acids in such Ports?

Prof. Rising.—I would like to leave the tannin report for another time, but the acid was reported on the basis of sulphuric acid, it was 35-100 of one per cent., the volatile was .04 or nearly .05 of one per cent. A second examination of what was known as Medium Port gave .38 of total acidity, volatile acid .06 of one per cent.

Prof. Hilgard.—Not the total acid?

Prof. Rising.—Yes; the total acid was .35 of one per cent., and .06 volatile acid —it was almost nothing.

Prof. Hilgard.—.06 of one per cent?

Prof. Rising.—.06 of one per cent. The best foreign Port showed .35 and the volatile acid nearly .04 of one per cent.

Mr. Wetmore.—I have a number of analyses in my hand, but they only arrived yesterday, and I have, therefore, not had any time to study them. I presume they will be more valuable to discuss when they are in print, for it is very difficult to follow figures. I observe, however, in the analyses of the tannic solution that the Tannat shows .035 per cent. tannin; Cabernet Sauvignon, .038; Lenoir, .032: Matrro, .046.

Prof. Hilgard.—Is it decimal thirty-five or naught?

Mr. Wetmore.—That is the way it is written here.

Prof. Hilgard.—That is it would be .35.

Mr. Wetmore.—It has tannin written per cent. above, and this naught 35 would be three and a half pro mille. The peculiar thing in the making of this tannic wine was that the alcohol was lost. We used in making this wine alcohol at proof, and after it had been on the pomace for some time we found the Tannat had only 21 per cent. of volume, the Cabernet Sauvignon 30, the Lenoir 31, the Cabernet Franc 34; losing on an average about one-half of the alcoholic strength. We found also in a Cognate case, when examining some wine last summer, or last fall, after it was left a week on the pomace, smelling of the pomace, it showed a very strong absorption of the alcohol. So there is a question as to the advantage of allowing the wines to macerate on the pomace; the pomace seems to have absorbed the alcohol. Mr. Crabb called my attention to it last fall also. After putting the alcohol on the pomace he very soon found that he had only 15 per cent. instead of having a very strong alcoholic compound, so that in making this tannic wine you did not get a very high spirit for the fortifying of wines.

Mr. Smith.—Is it not probable that the alcohol is absorbed in the pomace and by distillation it could be extracted?

Mr. Wetmore.—It is there but you cannot press it. The highest record so far, as shown by the analysis, shows but 34 per cent., while the alcohol used was 50 per cent. or proof.

Mr. Smith.—How was the volume of liquid that you extracted from it as to the proportion of alcohol you put in?

Mr. Wetmore.—That we have not absolutely determined. This examination was made in a hurry, and recently, and we have not made that determination. Mr. West has ascertained, however, by using the alcohol once and drawing it off that he could use it over again on the same pomace. While I am on that subject, as it is fresh in the minds of those present, I will refer to the manner in which we have concluded the best use could be made of it. For instance, after fermenting in a vineyard where there is a good deal of Zinfandel or fair ordinary grapes, you have also to ferment a small portion of other grapes that you may have in your vineyard, say of Cabernet or Mataro or Black Burgundy, and by saving the pomace and putting it into the barrel and adding to it XXX spirits reduced with water to proof, the tannin solution obtained will produce a good effect when added to the wines.

Prof. Hilgard.—How long is it on the pomace before extraction?

Mr. Wetmore.—Our experiments have not made that determination. The first was only ten days but it was a very powerful extract, but at the cellar we have kept it from 5 to 40 days. The authorities I consulted in the use of this indicate that the proper way was to leave it all winter and use it in the spring, but from the experiments that we conducted we were inclined to believe that the best time to use it was at

the time of the first racking, say in December. The material can be made and can then be used for putting the wine in a sound condition for spring time. If the wines contain a little trifle of sugar this material will be the only sure means of preventing all necessity of Pasteurizing and all necessity of dosing and caring for the wines in spring. In other words it clears and brightens them and puts them in a sound healthy condition. You get an extract of tannin which, while it relatively appears to be weak, performs in the wine a marvelous result. This experiment together with others of a similar nature make me believe that we do not know much yet about the use of tannin, or how much it is necessary to use in a given case, because the intensity of the action may depend upon the manner in which it is dissolved. For the small amount of tannin that relatively there is in this solution as compared with the amount of wine that can be treated, and as compared also with the result, seems trivial, and yet it has produced remarkable results. Have you any suggestions as to the making of these analyses? I would like to understand particularly if there is any difficulty about determining the sugar in wine. I have been very much confused in studying these tables from time to time of the sugar analyses.

Prof. Rising.—The sugar analysis is the easiest one we have to make. The copper test is the one employed and is very simple and straightforward, and the result would be very nearly correct.

Mr. Wetmore.—How is it as to the tannin?

Prof. Rising.—That is a more difficult problem. We are not satisfied entirely with the results and therefore we have not inserted the figures in this report that have actually been obtained.

Prof. Hilgard.—What method have you used in the determination of the tannin?

Prof. Rising.—The permanganate of potash with indigo. We were compelled to make our own indigo solution and we were not wholly satisfied with that solution —there was not time to order any, so the tannin experiments will be repeated.

Prof. Hilgard.—I have found in my experience, in the spindle and copper test experiments that the sugar with the copper test almost always was equal and sometimes above the spindle indications. The copper test I think is the best in pure solutions of sugar and I wanted to know whether that had been your experience also.

Prof. Rising.—There is a certain element of error there, yet I have not considered the error a very large one.

Prof. Hilgard.—The test that we made amounted to this: That while the body indicated by the spindle was two and a half per cent sugar the sugar indicated by the copper test was equal to the total amount indicated by the spindle, and that notwithstanding the fact that the agent was prepared every time fresh in the beginning. I think we have a good deal to learn about the correct determination of sugars in musts.

Mr. Wetmore.—That is the reason I asked the question, for wine makers want to know how much sugar they have in their musts and what is the best way of determining it and how much alcohol they have a right to expect. The best method I can see is the use of the saccharometer. I think it would be very well in making these analyses in the future that whatever method may have been used for determining the sugar it should be stated, and that at least some standard saccharometer should be recognized for the wine makers must use a saccharometer for they cannot make anlayses. I noticed in the reports of Professor Hilgard some time ago, in analysis of must, the sugar column showed less than the total column of solid contents, so there was a discrepancy between the amount of alcohol and sugar, as though there was a loss of sugar; as though the analysis was not accurate. We are all able to understand when we are talking about the amount of sugar in wine how much alcohol we are entitled to receive; when we use the Balling scale, I found by our experiments, we got a little more than one-half. For instance, with Trousseau examined here (I made that myself so I know just what it is) it had 24 per cent by Balling but the analysis of the wine showed 13 3–10 per cent of alcohol. And so with many other cases. But it is very close to Balling and we can figure a little, therefore, over one-half. Divide the amount of sugar by two and you get about the approximation of alcohol. Whereas you cannot do this by any other of these chemical tests. They bear no relation whatever to the result.

Prof. Hilgard.—I have noticed a discrepancy between the sugar and indications of alcohol. I have in several instances obtained more alcohol than the sugar seemed to entitle one to, that is by the spindle indication, and it has puzzled me much and I have been investigating as to what made the trouble. As regards the copper test I really rely on it less than I do on the spindles. I use always the optical method, the polarizing saccharometer which gives the more reliable information.

Mr. Wetmore.—What would be the objection to determine with the saccharometers in use the amount of sugar? Are they not really more accurate than the other methods?

Prof. Hilgard.—When you have a pure sugar solution the copper test is absolute, but when it is not pure it is not so correct. We have tried to get rid of that difficulty. I rely on the copper test for deciding the ratio between two sugars rather than the amount in the must.

Mr. Wetmore.—I find in here (referring to analytical reports) solid extract which gives more than the amount of sugar, which is as it ought to be. The analyses in other

cases which puzzled me were the very opposite, the sugar was shown to be greater than the solid extract, consequently there must have been a mistake—it was shown to be greater than the total solid contents.

Prof. Hilgard.—That happens continually:

Mr. Wetmore.—But in this I do not find it so. I will read it.

Sugar.	Total Extract.
.011	.307
.011	.141
.015	.191

These are in wines.

Prof. Hilgard.—That makes the difference. I spoke of the determination in must. It is in must that this discrepancy occurs.

Mr. Wetmore.—Does it not occur in wines ?

Prof. Hilgard.—Not so much.

Prof. Rising.—We have only wines here in the analyses and Prof. Hilgard is referring to experiments with must. The discrepancies are a little different.

Mr. Wetmore.—I did not know that, but I know that there have been these discrepancies and it puzzled me in studying them over for I did not know where the trouble lay.

I have been requested to explain the object of this microscopical exhibit. Mr. Grandjean, as assistant to Prof. Rising, has been gathering during the last vintage specimens of the different fungoid germs found in wines during fermentation. Not only in those which were healthy, but also in those which were diseased. I would remark that, before we adjourn, those who are studying wine making should pay a little attention to this exhibit, and to illustrate the importance of it I will state a single case. Mr. Tobin sent us some wine that would not remain clear, and wanted to know what was the matter with it, he wanted it analyzed. We suggested to put it in the microscope. On doing so we found it full of floating germs, very similar to mycoderma aceti, or the germ that forms on the top of vinegar. By treating it antiseptically we entirely destroyed them, by Pasteurizing them. That was a case in which the Pasteurizing was positively required for the work, and it entirely killed all the disease that was in it. As soon as that was done the wine stayed clear. The wine makers whose wines will not clear may find it to their advantage to have a microscopic determination as to whether the cause is disease in the wine or from something else. If they find that the wine is diseased they know what to do, to Pasteurize and the wine is all right.

Mr. J. T. Doyle.—May I ask a question either of yourself or of the other two gentlemen who may be supposed to represent the scientific learning on this subject ? Whether anything has ever been found out adverse to this process of Pasteurizing wine. I have read Pasteur's book through and through and of course he extols it and makes it to appear a perfect remedy for any faults of improper fermentation which may take place in the wine, but it occurs to me if it had been found to be so entirely good in practice that it would have been adopted to a larger extent than I can hear of it having been adopted in France. I take and read scrupulously a paper called the *Moniteur Vinicole* which is published at Paris and comes out twice or three times a week. I read it from beginning to end, including the advertisements, and I find very little allusion to that subject. Once or twice I have seen advertisements for works for the purpose of Pasteurizing wines, but it is very evident it is not a process resorted to to any great extent in France. Now why not, if it is the sovereign remedy Mr. Pasteur believes it to be ? Why is it not adopted generally? It is a very interesting question for California for the reason that California wines have hitherto been sent abroad and spoiled on the journey. I understand that a cargo of California wine some years ago was sent to Germany, and the complaint was that it had gone wrong on the voyage and when it arrived at its destination it was good for nothing. We certainly have wines that would not travel. Now can any gentleman tell me whether there has been any objection discovered to Pasteurizing wine? If not, it is important to know it. If it does not affect the flavor and good quality of the wine I should favor doing it in many cases for fear of accident.

Mr. Wetmore.—I will answer but briefly, I suppose Prof. Hilgard will have something to say on that point. I have asked the same question myself. Theoretically it is as sound as a dollar, but practically, like Mr. Werner's project of carrying must east without fermenting, it is a failure. It is one of those things that has to be managed with all the conditions favorable and with some one competent at the head of it. The pasteurizing of the wine only kills the ferment that is there, and that has been done most thorougly, but the receptacle into which the wine has been passed through, the air contains germs that have started it again. For practical use I think it is useless except to kill the light diseases and give you an opportunity to clear the wine. It requires too much of scientific character in the handling to be in very general use.

Mr. Doyle.—I don't see much scientific work in regard to it. The whole operation consists in raising the temperature of the wine to 140 degrees Farenheit and letting it cool again. Your cook does that every day. In cooking potatoes, he raises it to 212 and lets it cool again. There is no science in that. Now what is the matter ?

Mr. Wetmore.—What do you put it into ?

Mr. Doyle.—I put it into a hogshead and subsequently draw it off again. It is not subject to any atmospheric influence more than it would be in the drawing of wine under any circumstances. There is no diffi-

culty about that; now what is the matter?

Mr. Wetmore.—But the casks that you are drawing it into are full of air, that is full of germs.

Mr. Doyle.—If there is any difficulty about that I will put it into casks that have been sulphured. Besides, if you draw it from one cask to another you get into another atmosphere, you cannot get clear of the atmosphere under any circumstances.

Mr. Wetmore.—That is the trouble.

Mr. Doyle.—Why is it then there is no danger in drawing off wine as we are always doing? For instance, I drew off my wine about four weeks ago from the lees and put it into new casks.

Mr. Wetmore.—If the wine is sound there will be no difficulty.

Mr. Doyle.—Having been Pasteurized, and the germs of false fermentation killed, it is supposed to be sound.

Mr. Wetmore.—But there is something in it that will cause a refermentation of the false germs.

Mr. Doyle.—But I have killed the germs of the acetic fermentation and the wine is sound.

Mr. Wetmore.—But there is material there that will feed the unsound germs as the conditions favor it.

Mr. Doyle.—Then it is not the atmosphere that I draw it into, for I draw it into the atmosphere anyhow.

Mr. Wetmore.—Some wines will pass into vinegar quicker than others.

Mr. Doyle.—You and I are not supposed to be posted on the science of the subject, but I want these gentlemen who are the scientists to give me information, if they have it, as to what is the objection to the Pasteurizing system.

Mr. Wetmore.—I have read Pasteur and all the authors and that is what is called science.

Mr. Doyle.—What is there on the other side to read?

Mr. Wetmore.—Nothing at all, but a record of failures of men who have not practiced the work according to Pasteur. As Professor Hilgard said yesterday, when the work is done in glass you never have any trouble, but when you do it in wood you have. We have wine here that has been Pasteurized, and keeps at one per cent of sugar with no trouble after doing it, but in running it into wood you are sure to affect it.

Mr. Doyle.—That does not answer the question. I am no worse off than I was before, if that is so. I want to know whether the Pasteurizing of wine is liable to do some new mischief? Whether it gives to the wine as Pasteur relates, that the people who tasted for him, some of them, pronounced that it gave to the wine a concocted taste, and if it does that it spoils the wine for drinking purposes? I am not afraid of the atmosphere; I have the atmosphere here now, but I want to know whether it does it some new harm? For instance, in regard to shipping wines are you in danger of making it unsound where it was sound?

Mr. Wetmore.—That complaint has never been made unless it is made too hot for a long time. If it is Pasteurized according to Pasteur, by just passing the heat through it I never heard of a complaint. Sometimes I have seen merchants who have tried to use it pronounce it impracticable, that it does not work. It is like bisulphide when used in the vineyard; it will kill everything in the laboratory but when you go into the vineyard some thing will escape it. I would rather trust the tannic wines than the Pasteurizing.

Prof. Hilgard.—I must say as regards the failure to introduce Pasteurizing generally that I believe it is largely due to the fact that it disturbs the favorite method of the dealer and they do not like to introduce a new method which requires a little outlay and great care. It is much easier to put chemicals in, especially plaster, than to Pasteurize. The apparatus costs, and the supervision of the work requires care. It is very easy to do it either right or wrong. A man who has once done it right, according to Pasteur, does it as easily as by any other operation where he has to attend a thermometer. Now the condition in making it thoroughly effective its very simple. It is not desired to make the temperature unnecessarily high. It is intended only to raise the temperature as little as possible The higher you raise the temperature the more danger there is of what is called cooked taste. Some germs may be killed at 140; these are the yeast germs of the vinous fermentation. The lactic germs are not so easily killed; they require a higher temperatvre; so when the wine is milk-sour you will generally have to Pasteurize it at 160. The Pasteurizing arrangement by an open fire is a process that many men will not attend to closely enough, and I think it is for this reason in Germany they use the steam with a stopcock which regulates the action of the steam. That has been substituted for the open fire. Anyone can see in using one of these aparatuses a constant tendency to variation in the thermometer, and these variations are due to a want of correct management. It is perfectly easy after the temperature is rising too high to lower it, but if it goes a little below the proper heat some of the germs will escape and the wine remain only partially Pasteurized. Now compare the care required in this case, and you will find it is no more care than an engineer gives to his boiler but it is not so easy as compared with the process of putting in a little plaster. It is so easy to throw a few handfuls of plaster on the grapes, and thus substitute the tartaric by sulphuric acid. That helps to preserve your wine. It may not hurt it, but it has no hygienic properties and we recommend wine for its hygienic purpose. That is the reason why I speak

so strongly in favor of Pasteurizing as against all other modes of making pure wines of all that are unsound, as being preferable to anything that can be used in the way of disinfectants. Mr. Wetmore speaking on the matter of tannin recalls to my mind the remarks of a German analyst that tannin is by him considered rather as a non-preservative of wine and as dangerous. It was surprising to me to have that said and yet it is from nobody less than Von Babo, who speaks of the fact that after full experiment he finds that highly tannic wines are more easily decomposed than those that are not so highly tannized. Yet it is not surprising. If you take the common tan bark or nut galls and immerse them in water and then let them stand in the atmosphere a little while it takes but twelve hours to cover them with mold. The tannin is completely destroyed and they are starting on decomposition. I do not believe for the purpose of maintaining the wine that tannin is a valuable article unless it is affected by the other substances used. Prof. Rising has spoken of the preservatives used and the one most commonly used in plaster. The objection to it is a sanitary one, the tartar being substituted by sulphate of potash.

I think that a great deal of the opposition of wine makers to Pasteurizing is simply due to the fact that, if done properly it is a troublesome and sometimes expensive process, but I think it is worth more than the difficulties that may stand in the way of the process. I think Mr. Doyle has properly stated the points in regard to the effect of the atmosphere on Pasteurized wines compared with the effect on wines that have not been Pasteurized. The invention of Pasteur is for the purpose of destroying certain noxious germs that are supposed to be in the wine. I do not see any necessity of Pasteurizing wines that are sound and in which the microscope or the taste cannot detect anything wrong. But it is certainly true that Pasteurized wines in thoroughly bung tight casks, and proof against shipment—passing the equator twice and around the Horn once are certainly better than those which are put in casks with the slightest taste of milksourness and then exposed to the various changes. But if the delicate wines are not to lose their flavor they must be cooled as quickly as possible and for that reason it is better to use the spider Pasteurizing apparatus, and it is better for ordinary purposes to run the wine hot into the barrel in which it is to be shipped by means of a cover around the pipe which goes into the bung, the hole keeping the heat so that if the wine comes through the pipe at 150 or 155—which is not too much for ordinary wine which has no delicate bouquet to be injured, it will reach the barrel at a temperature of 145, which is enough to disinfect the barrel, and the bung put in it. Of course cleanliness has to be regarded in all cases. The reported failures should be taken with allowance from persons who object to that which is less convenient than that which they are at present doing.

I think that Pasteurizing is a matter of great importance to us as our wines have such a distance to go to market. Before we pronounce it a failure I think we should carefully experiment on the subject and note the result. Do as one of our wine makers has done, ship a barrel to New York and after a time have it shipped back. If that wine arrives safe he then feels justified in shipping it to Europe. I think our experiments should be made on an extensive scale. Before condemning Pasteurizing I think we should be very careful in our trials of that which is better than anything else that has yet been produced. There is also another advantage in it, in that it renders unnecessary the use of the antiseptic which our temperance friends intend to substitute for alcohol. I took some wine a short time ago with my supper that had been treated with some of these antiseptics and I will say that my supper absolutely stood still in my stomach for 3 hours. Now if that is any better than alcohol for the stomach I would like to know it, and submit the question to you. I doubt if salicylic acid should be tolerated even in small proportion where wine is used for hygienic purposes. With Pasteurizing the use of these antiseptics is done away with, and for that reason I think we should give it great attention.

Mr. Wetmore.—This subject has come in to-day directly with the work of our commission this year. I think it would be of more advantage to us to discuss these matters as we go along as we are doing than to bring in a long report. As to the question of antiseptics there should be no two ways. I made that point to the committee of Ways and Means in Washington, that in providing for a bill that aimed to suppress injurious adulterations we should endeavor to stop the use of these so-called antiseptics. I am opposed to antiseptics because it is used for the purpose of killing one form of life. Now whatever kills one form of life is more or less, as a rule, injurious to another. It is not always so but generally that is the case. Consequently we may look with suspicion upon all positive antiseptics. I never however heard the use of gypsum referred to as being for its antiseptic properties. I have no doubt at all but that all potash salts are antiseptics more or less. Even cream of tartar is antiseptic naturally in wine. Sulphuric acid, which the Professor has referred to as antiseptic, is on the contrary—unless used to excess—not an antiseptic but it stimulates the ferment. It has been used for that purpose in this State. I have used it in wines to promote an acid fermentation. A great many people imagine that sulphur of itself is antiseptic. All he has to do is to mix it up until the must is perfectly yellow with it and he will get a violent fermentation. Tobacco is supposed

to be an antiseptic but it will promote a violent fermentation. Coffee, supposed to be antiseptic, is a violent promoter of fermentation. Sulphuric acid in excess appears to act antiseptically only by its corrosive properties.

The use of gypsum has been practiced from time immemorial in certain countries. It is something we do not want unless we find ourselves forced under certain circumstances to apply it. The object is claimed to be in those districts not to preserve the wine against disease, but to clarify and brighten wine, and how it operates to do that nobody seems to know. It seems to intensify the color and influences the sulphuric acid which is in the sulphate of lime. As to the danger from its use, I think it is but the veriest bosh in the world to talk about it. The English people and others in European countries, have been drinking plastered wine ever since the practice was introduced, and it was used by their grandfathers before them. The wines of Spain and the south of France have been plastered (that is the English word) for generations, and the wines that have been so treated have been considered wholesome throughout the country except by a few chemists who have arisen lately and find fault on the smallest ground. The fact is, a little sulphate of potash is an antidote against the alcohol. Alcohol tends to excite the action of the heart and the sulphate of potash has an opposite effect. In truth it is simply a little Glauber salts.

Prof. Hilgard.—There I must take issue as a chemist with the Chief Executive officer. The salt that is introduced into the wine by the use of chemicals is not Glauber salts; it is bi-sulphate of potash. The double decomposition that commences in the bi-tartar of potash on one hand, and the sulphate of lime on the other, is to make simply bi-sulphate of potash and precipitate a carbonate of lime. Now the reasons for the addition of plaster are very simple; one reason is that whenever it forms a precipitate, the wine is to that extent clarified, at least that is one effect; the lime has a peculiar effect in making a fine sediment settle; it has some effect to the clay. When it is spoken of by the chairman as not injurious it is a slight mistake.

All over France the amount of sulphuric acid contained in the wine is regulated by law, and is not allowed beyond a certain amount. The plaster is not allowed beyond a certain amount, because the presence of plaster, and its amount, indicates the presence of bi-sulphide of potash.

But to show the difference of bi-sulphate of potash and Glauber salts. The one is a simple aperient which nobody objects to in moderate amount, but the other would be very objectionable. I defy the stoutest stomach to take a tablespoonful of this bi-sulphate of potash. The Chairman has said that this substance is not injurious, or not antiseptic, and there I must pointedly differ from him. Sulphuric acid is known as an antiseptic and as a preservative, consequently it acts, a certain amount of it, inevitably, not by its corrosive quality but by its strong acid, to a degree not compatible with organic life. I regret to differ so pointedly with the chairman, but I must do so as a chemist.

Mr. Wetmore.—The way doctors differ on this is amusing. I like to hear authorities quoted when I hear these disputes. I have tried sulphuric acid and arsenic, and it does not stop fermentation. The fact that the French government which is the most particular in the world, allows the use of sulphate of lime shows that it does not affect it. They allow wine to pass current which does not contain over two grammes per litre. They practice the use of it where it is necessary. Everyone of these samples of these fine sherries that we try to imitate have been treated with sulphate of lime, and they are used by the medical men the world over. It was held in France, that not to exceed the proportion of two grammes per litre of sulphate of potash would not make it inadmissible for use in the hospital. Now that is not a consistent statement with the other that they are absolutely wrong. The fact that sulphuric acid will kill certain germs when used in excess, does not make it properly speaking an antiseptic, no more than if you take the alcohol itself. If you pour it over the germs it will kill them, but in a weak solution of it they will live. Bassett is a teacher who gives a great deal of information on these matters that are favorable to and opposed to fermentation. I gleaned more information out of his work than any others that I have read. I do not want to take up the time to find what he says on sulphuric acid, but I state positively, and challenge the Professor to disprove it, that I will favor a fermentation with sulphuric acid if I do not put it into excess.

Prof. Hilgard.—On the point that acid favors a sound fermentation I entirely agree. Let me state one more point, the Chairman stated that we all have taken Sherry containing plaster, and no harm has come of it. Yes, but we take a very small glass of it. What we are aiming to produce in California is the wine that we can drink by the bottle, where a litre contains more than the two grammes allowed by the French Government it has to be trimmed down, and I think if we can avoid it it is better to do so. A small amount of acid does promote fermentation, and when a little sulphuric acid is added to the wine it forms sulphate of potash and free tartaric acid; but if you add sulphuric acid in excess, so as to form free sulphuric acid you will find the fermentation is checked. If you add sulphuric acid to the wine in such a proportion that you get free tartaric acid, that promotes fermentation so far as to be against milk sour fermentation. As to the

second crop of Zinfandel, it is more especially affected by some of these acids than the first. I do not want to go further into the details of the matter. I say when sulphuric acid is added only in a small proportion so that it does not bring into existence free sulphuric acid it will not be injurious to fermentation, but if it is added to excess twill check it.

Mr. Wetmore.—I can only say that I have tried it and made it so strong that it burned my tongue in tasting it and it did not stop the fermentation and I could not find a limit to it.

Mr. Doyle.—I notice that this book of Basset's is 29 years old.

Mr. Wetmore.—Yes, but it has a great deal more in it, which on testing I find to be true, than any other that I have consulted. I have demonstrated those things to find whether they were true or not. I want it to be distinctly understood, and this I say owing to the disputes that I was drawn into last year, that I never did recommend it except in extreme cases and for a common quality of wine where no other remedy is known.

Mr. Doyle.—What is the plaster used for and how do you use it? I have heard about it for four years back and I have never known anybody yet that admitted the using of plaster on any occasion when it was recommended.

Mr. Wetmore.—I know lots of people that have used it in this State for years, but, like lots of practice in the country, the people hold to the secrets of their method and don't like to give it away for fear of having it known as they think, because somebody will make use of it. The use of plaster is for such cases as our Mission grape in the South, which cannot travel anywhere. The wine makers that have them cannot send them away clean. It is particularly applicable to wines that need to be kept, that are strong in alcohol and have a high degree of sugar with very little tannin. In other words it is a substitute for tannin.

Mr. Doyle.—How do they use it?

Mr. Wetmore.—They sprinkle the pulverized gypsum on to the grapes and the amount contained on the grapes is small.

Prof. Hilgard.—Three or four pounds is sufficient for one ton.

Mr. Wetmore.—They throw it over it. They do this in Spain, the South of France and Italy wherever they are troubled with wines that won't stay clear after fermenting. It was really an invention in the past as a substitute for tannin which they have now found out can be used in place of gypsum. They accomplish the same result by the use of tannin and much better. It was only recently that they found out the proper use of tannin. The most important work of our investigation last year is the use of tannin in wine making or in preserving the tannin afterwards, or in the dosing of wine, and how it may be used and in which way it is most beneficial. I had been led to believe that tannin had retarded fermentation and it was only in the latter part of the past vintage, when we first encountered the milk sour wines—and they came upon us so quickly before we had finished the other questions as to how to promote fermentation after it was arrested, that I looked up this question to try to find out how milk sourness was produced and what might be its remedy. We found it was a deficiency of tannin and acid that caused it. When that was ascertained the remedy was very plain, that is put in more tannin. Again the evil of milk sourness is more or less exaggerated. It will only go to a certain degree; its own acidity will kill it. Again there is no milk sourness in wine that can be developed unless there is sugar there; so it is not a matter to be constantly feared like acetic acid. If you can take your sugar out it is a harmless acid. If it can be neutralized and taken out there is no fear of it, unless there is some sugar there, but the germs will not work in normal acids. In the absence of sugar you need not fear lactic acid. There are wines here that have been exhibited that have from one-half to one per cent of sugar that are still unfermented and will break out into re-fermentation this spring. If that re-fermentation takes place in the presence of normal germs and with a proper amount of tannin in the wine it will be a good fermentation. Any excess of tannin is taken out in the clarifying. Where it goes to was part of our problem. We found a great many wines that have been analyzed and were deficient in tannin that on an examination of the pomace we have found plenty of alcohol. Why is it we did not have it in the wine? I do as I have often done in other matters made a surmise as to what has become of it in order to test afterwards if it is so. I assume this, that it occurs in wine that have an excess of albuminous matter, and the tannin is partially absorbed by the pomace and is left in the vat at the bottom.

Mr. Doyle.—Then it would not be in the pomace but in the lees?

Mr. Wetmore.—Yes. It has a great deal more that does not come out. The natural tannin that comes out in the solution of wine is lost in the clearing of the wine by an excess of albuminous matter. And there is where you lose your color in a great many cases. The addition of tannin is said to improve the color of wine. That is the chief value for its practice. The natural tannin of wine is found to be so intimately associated with the color that as the wine clears itself, being charged with albuminous matter, it takes the natural tannin of the wine down and some of the color. If you add the tannin as they do in France during the fermentation you precipitate your lees without your loss of color and so you improve your color without loss to the wine

We have tested this and know it is true. The probability is that the use of gypsum increases the color in the same way by getting rid of the sedimentary matter in the red wine with its tannin. But some rule should be observed by wine makers who are racking their wines. I have known those that do not understand the process put gelatine in the wine to fine them, and then say, "I am afraid of fining the red wine for fear of losing color." I have added tannin before fining and it will fine it without losing the color.

Mr. Doyle.—I think I would like to try the experiment. What is the formula as to the quantity of tannin to be put in?

Mr. Wetmore.—The most practical formula that I know of is the one that you must ascertain for yourself. If the wine is muddy it will take a great deal of tannin. We have a sample here of Mr. Crabb's wine that was turning milk sour and we took a lot of it to see what would be the effect of the treatment. We first took the lactic acid out with chalk and then treated it with a high degree of tannin. The wine is now tolerably clear and shows no trace of tannin. It has deposited itself and gone down with the natural alcohol. We only use chalk for the clearing where the lactic acid is distinct. I have a Sherry that has had both lactic and acetic acid, which I treated by an addition of tannin and it was good enough for me to show at Delmonicos and they thought it was a good wine. There is another experiment that we have tried for taking the acetic acid from pricked wines. It is common on all public occasions to say that you cannot do it. But people will do it so long as they can save the wine from souring. They wont throw it away if they can help it and the best way is to find out how to do it. It is easy to tell the people to send the stuff to the distillery, the merchants will not buy it, but it does not follow that the wine maker is not going to attempt to remove the acidity, for somebody is going to do it. There is one way of removing this. It consists in this that the acetic acid when it comes in contact with the lime in the wine forms an acetate of lime which is insoluble in the wine and is injurious to the stomach and gives the taste that has been given to wine and is said to be the lime taste. All wines have more or less lime in them. In Basett's book I found a remedy for that, which seems to have been suggested by somebody but no one took it up. It was the use of cream of tartar. The acetate of lime then being in the shape of potash which instead of being unwholesome is a slight diuretic. I tried some and there was no lime taste left in the wine.

Mr. Doyle.—What quantity should I use? Suppose you have a hogshead of pricked wine, what are you going to do with it? How would you proceed?

Mr. Wetmore.—Take one gallon out and see how much of the article you want.

Mr. Doyle.—What lime shall I use; quick lime?

Mr. Wetmore.—Yes; you can use quick lime if you want.

Mr. Doyle.—Between what limits am I to guess as to quantity?

Mr. Wetmore.—By your taste; the probability is that if you need more than from half to a pound, the wine is so bad that you cannot save it. If it is worse than that you need not use it for the wine is not worth saving. But if it has only a slight taste of vinegar, just starting in you will not want more than that.

Mr. Doyle.—You first put the half pound of lime into it?

Mr. Wetmore.—You have to make the lime into a form of milk of lime, and then stir it into the wine until it settles, and after that you will find that there is a tendency to immediate agitation again. The addition of tannin holds the wine, or as some people do, add one-half per cent of spirits. The tannin can be dissolved in alcohol.

Mr. Doyle.—How much tannin and how much alcohol. Suppose we were going to make an experiment here?

Mr. Wetmore.—If it was a wine, bright, clear and old it would require very little tannin, but most of them are muddy and in some cases you use a quarter pound of tannin to a hundred gallons. If there is material in the wine to combine with the tannin, it will disappear and precipitate. If it is pretty clear wine you want but little tannin. You must use this estimate as to how much tannin you may need.

Mr. Doyle.—A man who is as ignorant as I am of the whole matter wants to know whether he is to put in a pound or fifty pounds.

Mr. Wetmore.—I am only referring to this as an experimental work on our part to determine the process, leaving it for you to determine the rule.

Query.—You say that after putting in the lime and forming an acetate of lime, you require some cream of tartar. How much of the cream of tartar, if you have used a half pound of lime?

Mr. Wetmore.—In the experimentation that we commenced last fall, I used about half a pound of cream of tartar to 100 gallons.

Query.—What is your theory of the reaction that takes place?

Mr. Wetmore.—The acetate of lime is changed into an acetate of potash. It does not stay in the wine.

Prof. Hilgard.—I think I can clear the matter a little by a suggestion. It has been used for a long time, as stated by Mr. Pohndorff, in the East with great satisfaction. The recommendation of the Chairman is that in the first place you use lime to neutralize the acetic acid, and then add cream of tartar. This makes acetate of lime, and then you further decompose the

acetate of lime by cream of tartar. That is perfectly rational, and this method is preferred simply that you may form a preciptiate in wines that are usually turbid, and the precipitate of lime clears it at the same time. The acetate of potash can be formed just as well direct, and there is sold in this city a so-called wine restorer marked "E. V.," which I find is simply a carbonate of potash. You add that to the wine and it puts it in the same condition as if you had gone through the process.

Mr. Doyle.—But how much ?

Prof. Hilgard.—As you are not a chemist, and I cannot tell pro mille, I must say with the Chairman, that your taste must be your guide.

Mr. Doyle.—Now, I have a puncheon of wine pricked, and I want to try that experiment. I take, say 60 gallons, now exactly how much of the carbonate of potash would you begin with ?

Prof. Hilgard.—I would in the first place try one drop in a gallon, and if it is too much try half a drop. Or put in two drops, just until you find by your taste that it is satisfactory. I think that, perhaps, a half a thimbleful would be sufficient for a gallon of wine. That gives you some idea, but you must be guided by your taste. If I had it in the laboratory I would ascertain how much acetic acid it contained and then add the exact equivalent. Not having it there to determine exactly what is required I ean only say to you that your taste is the best guide.

Mr. Doyle.—Is the action instantaneous?

Prof. Hilgard.—Yes; but in cases where the wine is turbid, the round-about method that the Chairman speaks of, is preferred, because thereby the precipitate is formed.

Mr. Wetmore.—I read these same things just as I am announcing them, and I had to go to work and find out just what was wanted, and I am not prepared to lay down any rule. In the case of lactic wine I do not know of any cause for carrying through more than one and a half pro mille of lactic acid. As soon as they get strong in lactic acid it stops. The only serious disease we have to encounter in wine is the acetic that we cannot cure easily.

Query.—Is there anything else we can get, any wine, any other substance that we can get to mix with the wine, or to suspend in wine to take the place of lime. I have cured pricked wine frequently by suspending marble in the middle of a cask of wine.

Mr. Wetmore.—That is lime.

Query.—As soon as the acid is neutralized the action stops. The consequence is you have not got to use the other means to clear it afterwards.

Mr. Wetmore.—The trouble is you do not distribute it through the wine sufficiently. Another thing is you can take a small egg shell. If there is any acid in the wine it neutralizes it and will take the acetic acid out.

Mr. Doyle.—Is the action instantaneous?

Mr. Wetmore.—The moment you put it in there is action if there is acetic acid, but if there is not any acetic acid there is no action.

Prof. Hilgard.—There is this to be said on the suggestion of the gentleman, that the acetic acid is first acted upon by the marble. After the acetic acid is formed, an insoluble substance forms on the top of the marble and stops the action. As soon as the acetic acid has gone through there begins the formation over the lime, and so far this is a perfectly rational mode of proceeding, but I must say that I do not see the necessity of proceeding in that way, as creating an acetate of lime when you can use the carbonate of potash direct. The "E. V." is essentially carbonate of potash, or as they called it in olden times, pearl ash.

Mr. Portal.—Have you read any authority given why the plaster is used in the south of France, and how they use it ?

Mr. Wetmore.—The best authority I have been able to consult on the subject is contained in Gotte of the laboratory of Paris. There have been a good many substances used. The use of it by some is simply following the rule of thumb—he finds out that it does his wine some good. I asked all the gentlemen whom I found in London, "Why do you use it ?" One said for one reason, and one said for another. The fact is they used it because they found it did the wine some good and the wine kept well but could give no explicit reason for doing so. You will find a commercial reason for a wine being plastered as in many of our southern wines.

Mr. Portal.—They generally put it on the grapes before crushing.

Mr. Doyle.—My conclusion about the European methods is that the bulk of the wine made in France is made in small quantities by peasant proprietors. There a man who has six or eight hectares of ground and he makes his wine as his grandfather did before him and he has got no more scientific information than his grandfather had and he knows no more about it. So I don't believe we shall get much benefit by studying their reasons and I look therefore to the intelligent discussions amongst the people of this country for conclusions and information. The way they have been making their wine, simply following the course that their fathers before them did is very much like the story told of the way in which the Irish people carry in their butter to market. They carried a firkin of butter on one side of the donkey and a big stone on the other, Another woman would follow with a donkey having a firkin of butter on one side and a stone on the other, and so on. But when it was suggested that they could put a firkin of butter on each side and leave the stone off, they said it was good enough for their fathers and it was a way that suited them,

and they went on in the same way. I am satisfied that the bulk of the wine made in France—outside of the big vineyards—is simply made by a method that they have been accustomed to and which they have learned is sufficient to make a wine that will sell. I see the French government has legislated against the use of plaster. The people have gotten into the habit of doing this work, and the putting in of plaster, but I do not think they can tell us as much about the reason for doing it as you have done to-day. I have read of two or three seizures in France by the government. They exercise a wonderful vigilance over the production of alimentary substances, as they call them. I noticed an item of news, that so many hectares had been seized for being unreasonably treated in some way or other. The government have seized these products which I presume were not fit to be drank and they have condemned them to the distillery, but in one case I read of it was condemned to the gutter, it must not be used at all. I am satisfied from what I have read about it that they are doctoring wines in France enormously, and the French wine that is exported can no more be relied on for purity than that which you (Mr. Wetmore) got on Eighth Avenue in New York, and which you are trying to get a law against.

Mr. Wetmore.—Mr. Doyle is perfectly right as to the practice of following their forefathers, but I believe I am perfectly right in this statement that in my search—groping around to find rules to help people who are working under these different fermentations I have to go to the same forefathers. The scientist does not know anything about it. The scientist has no place in the field. I find that in making their raisin wines and difficult fermentations in the south of France they put in a little tannin and tartaric acid. We do not find that in the books, but we find that that accomplishes the purpose. I believe if our people had understood the use of tannin as they do in the south of France, and in all countries where they have a high degree of sugar, and if they had used tannin in their last diffiuult fermentations they would not have had any sweet wines at all. We tried to procure some as soon as we discovered it. It was too late to go into the field generally but as soon as we got the idea we tried it, and in every case the fermentations to which we added tannin went through first. In some cases we tried a difficult must that we got from Stockton of the Mission and that it was thought would not go through. To some of it we added tannin, and that went through slowly at an easy temperature, but it went through to the finish. I am satisfied it is the only rational treatment we can apply, and it is the only rational remedy for keeping the wine sound. There is no scientific explanation of how it operates.

Mr. Doyle.—But we have to go to our scientific men to find out how we are to use it.

Mr. Wetmore.—As I have said, you must experiment and be guided by your taste in the use of it.

Mr. Portal.—If you add lime in a cask, half a pound to 100 gallons, how soon after the operation do you draw off your wine?

Mr. Wetmore.—Just as soon as it is clear. It will take 12 to 24 hours and then it is drawn and treated like other wines. We also made a number of experiments in bottles to avoid the use of lime, as I found by its use there was a qnick fermentation of the acetic acid, and I found that with the free use of tannin acetic acid will not form. The excess of tannin you can afterwards remove, and with it the floating germs that are thrown to the bottom. The treatment with cream of tartar probably acts, and is a benefit as the Professor says, by revivifying them quicker. You cannot buy carbonate of potash pure. You get carbonate of soda and carbonate of soda will spoil your wine, give it a soapy taste. When I say lime I mean any form of lime. You must guard against another thing. There is a form of fermentation known as the chalk fermentation, and there may be some forms of chalk that are objectionable. I do not think it proper to use chalks that are not easily dissolved. They turn to milk and are very dangerous; but it was a new thing for me to learn there was a fermentation excited by chalk. The absence of acid in the presence of alkali will produce the lactic acid. For instance if you take flour and stir it in the fermentation without the use of acids in connection with it you will very likely have the lactic or butyric fermentation. That I found out by repeated experiment, but if you will add tannin or tartaric acid it will not do so. And in these cases of lactic wines where as the Professor said yesterday they found the absence of acids general, it is the want of proper constituents in the wine to hold the ferment healthy that does the evil. Now if you will restore the wine to the proper acid condition you will not get any lactic fermentations. If that is guarded against and watched, and as a general rule it may be watched, you would not have any trouble. You can check the lactic fermentation also.

The Convention was then adjourned until 8 o'clock, P. M.

EVENING SESSION.

In the absence of the President the Convention was called to order by Mr. Wetmore who said:

Before we enter on any general discussion we will listen to Mr. Morse who is here, who has been engaged during the last six months on behalf of the Commission, part of the time during the college vacation and part of the time in attempting to collate statistics of plantation and production connected with

vineyards throughout the State. This was the most difficult work we have had to do. We have tried for three or four years to get statistics in order to make estimates in advance of what our crops would be, and establish the character of our plantation. I have not had time to consult with Mr. Morse since my return from the East. I do not knowhow far he has got along with his work, but he tells me that he is prepared to make a brief report without submitting exact figures.

Mr. Morse.—Mr. Chairman, ladies and gentlemen: what I have to say to-night will be more in the nature of an appeal to our viticulturists to assist in the work which we have already begun. You are probably all aware of the work that was inaugurated by the commission last summer. At the time some circulars were sent out, which outlined the plan that they intended to follow, which you know embraced a knowledge of nearly all the facts relating to viticulture. In the first place we were to collect statistics in regard to the acreage, variety of wines, ages of different vines, the production of with the total amount for the state, the manner of getting rid of products, and also the general movement through and out of the State. Besides that, we expected to get information regarding the tillage, the cost of land and the facts of irrigation, and in fact everything that would be included under a general viticultural survey. You will see at first sight that the work contemplated was altogether too much to be comprehended in one season. The intention was to distribute these cilculars to each one of the viticultural inspectors throughout the State, and as we received the report from them, to send a special agent or inspector through the country and make corrections or tabulate the results that were given, so as to have no two reports covering the same ground. The reports were sent out in the early part of June, but I am sorry to say that only a very few of them have been responded to as yet. Therefore the plan of our work was defeated. After this we sent out blanks for acreage. On these blanks were spaces for the different varieties of vines, and also for the acreage of each vineyard of from one to six years old, and all vines over that were to be comprehended under the title of "full bearing." As the result of that attempt, we have reports I think from 158 districts, but some of them are not as they should be. There still remains a large number of districts not heard from in the counties most fully reported. In Napa, Sonoma, Santa Clara and other counties, the reports have not been sufficient to make any estimates from them; I have taken such reports as I have received from counties nearly finished, and compared them with the reports given in the assessors returns for 1884, and they seem to indicate that there are about one hundred thousand acres of vines in the State. To show the necessity of carrying this work out, this same acreage was reported about four years ago in the assessors report. The results that we get from those counties that are must fully reported, are very interesting in showing that the reports that come from the assessors offices are not fully to be relied upon, for instance, we have had Los Angeles County reported as having twenty-five thousand acres. Now in the only trip that was made to that county, a report of nearly all of the districts, obtains and shows the total summation not equal to 15,000 acres. We have from Contra Costa by the assessors returns about three thousand acres. That county has been reported very full, and it will scarcely show two thousand acres. The same way in some other counties. Placer county is reported by the assessors to have 2200 acres and it will fall very much short of it. This merely shows that the reports that we have based our calculations on so far are not in any case to be relied upon.

I have here another table which is the summation of reports, handed in by the different inspectors, and from which I will read the totals of a few districts. I have taken quite a number of the counties thst are more fully reported, and in these we have 31,000 acres of vines that were planted in the years 1885, 1884, 1883, 1881, and those previous to that are considered full bearing vines. This shows an increase in the planting up to 1883, and since that it has gradually decreased. Of the 31,000 acres we have at present about half of them bearing. So that in the next three years the bearing capacity of these vineyards will almost double. In 1883, for instance, there were, out of the 31,000 acres, 5,872 acres planted, which will be in bearing in another year. The planting has since then gradually decreased until out of the 31,000 acres we had last year but 3,600 acres. From that you can see the rate at which those vineyards will come into bearing for the next three years.

Regarding the production of different vineyards we are not, of course, able to get, unless we have special agents to visit each of the wine cellars. I passed through Los Angeles district and obtained the total tons bought by the larger wine cellars, and I know we have there less than a million and a half gallons of wine, and I believe the county is reported at something like four or five millions.

The whole work that we have thus far done points to over estimation, not only of the products but the acreage. It is interesting to see also that some of the counties make rapid increase in certain districts, for instance, some of those that were reported from San Bernardino county, have filled up very rapidly. Some of the interior counties, which have been reported very minutely, the increase has been a very great one. But scarcely any of these are making

the rapid increase that they were some time ago. For the last year or two the number of acres that have been planted is much less.

The main question that we want to urge on the viticulturists is that they should give more assistance in this work. Out of the 150 inspectors we have reports from less than fifty. We must have more co-operation from those who are interested in the work before it can be carried on with any success. There is another point, to which we would like to have some attention paid. In collecting the facts, and making a statement of them, they should be a little more particular. With a large number of reports there is a certain amount put in as unclassified. If we wish to get a correct estimate of the different acreages this work must be done a little more minutely. There are quite a number of interesting points which naturally come from the reports, which could not be very readily summarized, or would be of no interest to state as it would simply be a mass of figures, but in the future we hope to be able to tell almost from a single sheet the total acreage of each variety, for each county and each district. We also expect to have the acreage for each year with the amount of production that we might expect from each of these varieties. It is to this end that we hope all who are interested in viticulture will assist us in doing this work. Not only those who are appointed inspectors in the different districts, but those who are owners of vineyards, can easily assist by handing in the acreage, not only of their own vineyards, but of the district. A large part of the work will have to be done by a special agent, who will go through the country and call upon the different ones and ask them to canvas the sections in which they are living. This plan was adopted in one or two counties, but the result has not been quite as satisfactory as desired, but reports are coming in slowly all the time; by extended correspondence we hope finally to obtain a result which will be of interest to the whole State.

Mr. Portal.—Is there any appropriation to pay those special agents to go around the country and get these statistics?

Mr. Morse.—I beleive not.

Mr. Portal.—How can the State and the Commission expect to get men to devote their time, several weeks, if not months, to attend to this without compensation. It would require a man of considerable capacity also. It would have to be a very generous man that could give such time as would be required.

Mr. Morse.—The manner in which we expected to get that information was simply this; there was to be a general inspector who was to collect the results obtained by different local inspectors, who, knowing all the residents in their section, can appoint men in different parts of the country to report on half a dozen or a dozen vineyards in their immediate neighborhood. These reports could then be handed to the inspector of that district, where they can be corrected and arranged in proper form, and then sent to the proper inspector. or one who is charged with the collating of results. This is very important because in the future we have to look to the question, of what we are going to do with the products. If we do not know what to expect we cannot make any calculation for it, but by knowing the exact age and acreage we can do so. For instance, in some of these districts we can tell now exactly the amount of product that we shall have for the next four or five years.

The collecting of these details will require a good deal of time and must be done through the districts by some one who will take time to go through the country and collect them.

Mr. Husmann.—I have been appointed by the Agricultural Commission as State Statistician of California. The work that you mention comes directly in the line of my duty, and I shall be very happy to cooperate with this commission in any way that I possibly can. I will remark here that you can get a full estimate of production, and an accurate one, of Napa county, from a recent publication of the St. Helena *Star*. I suppose you have that already. I have found it so far very difficult to obtain any reliable information. I have addressed circulars for the purpose of gathering agricultural statistics through the County Assessor, but so far I have received replies but from very few of them. They do not even respond, although the necessary blanks are sent together with a franked envelope, but many of them are very neglectful.

Mr. Morse.—I have written to the assessors of the counties where we have no inspectors, and I have not heard from half of them; they gave no result at all.

Pref. Hilgard.—As the vines are part of the realty, and are taxed as such, I cannot see how there could be any guess-work, and how it is the assessors do not have the returns. The tax register should show.

Mr. Wetmore.—It is not to our interest to raise that question. [Laughter].

Dr. Stewart.—I had a paper sent me, such as Mr. Morse has referred to, and I had to submit to considerable questioning when attempting to get any information. My neighbors wanted to know who it was that was asking this information. I told them it was the State Viticultnral Commission. They then wanted to know by what authority they were asking such information, and when I satisfied them as best I could on that point then they objected to giving the statement, for they said if we give a proper statement the assessor will come upon us and we shall be taxed. I was met with one objection after another until I was on the point of giving it up.

We got a few statistics together which I supposed had been sent here, until I opened a book that belongs to our society and I there found them carefully docketed.

Mr. Morse.—That is a great difficulty in collecting these statistics. A good many people seem to think this commission has no right to ask for the information. They do not seem to consider that they themselves are the ones who receive the benefit. The only way is to keep on and from constant inquiry reach as exact a result as possible. Some places where I have needed but a single vineyard to fill out a certain district, I have sent four or five letters to the superintendent and neighbors and I have not found out yet.

Mr. Husmann.—I shall be very happy to use your blanks if they are furnished to me.

Mr. Estee.—I have not seen them in our district.

Mr. Morse.—They have had them but have not reported. If the vineyardists themselves will take the matter in hand and report their districts it will greatly hasten the matter.

Mr. Estee.—I think it would be a good plan, if you will allow me to make the suggestion, to send to the presidents of the local clubs, they will give it more attention.

Mr. Wetmore.—Yes, but there are only about three clubs in the whole State.

Mr. Estee.—The St. Helena, and our clubs are still alive.

Mr. Morse.—We will see that they have the blanks.

Mr. Estee.—We will send in the returns just after the assessor makes his assessment. [Laughter.]

Mr. Wetmore.—I want to corroborate the remarks of Mr. Morse. This has been the *bete noir* of the commission since we have been organized. There is hardly a week passes but what some one wants statistics, they want to know how many acres we have in vines, and it seems foolish and absurb that we cannot get it. If you expect the assessors to get it, when you do not want the assessors to know you have a vineyard, how can you get the estimate. We ought to be able to know how much the crop will yield three years from now, with a reasonable margin of doubt, how much is in Zinfandel—in white wine and in red wine. We ought to know what we are doing, and we have made every effort on every side for three years; we have sent to the vine growers; we thought this year by getting one man to visit and see the people that we would accomplish somethiug. We have got, in a certain degree, where we can utilize these reports, by making estimates of what we do not know, but the reports are not forthcoming. For instance, Alameda county reports 4962¼ acres; Sonoma county has up to the present reported 1153 acres. [Laughter.] Such reports are simply useless, aud it is just about as useless so far as the assessors reports are concerned. Mr. Portal asks where the money is coming from. The State furnishes us with a very little money, and to those who are willing to help we give a corresponding secretary to organize. The vine growers must help. Mr. Portal is one of the inspectors, and it will only cost him a Sunday afternoon's work to take up and report his neighborhood and perhaps walking around a few miles to see his neighbors. In appointing inspectors, we appointed some who we thought were public spirited enough to assist in the work in their districts, and then we appointed as many more as were necessary to fill up the gaps in the county. Wherever there was a vineyard out of a certain district we have tried to get an inspector.

Now in Livermore valley, the editor of the Livermore *Herald* has, on his own volition, given to half an acre, every variety of grape that is grown there; and he publishes it in his paper. We know to a half an acre every variety of grape that is growing there. The same thing can be done in other parts of the State if there is a public spirit manifested. It would take fifty thousand dollars to collect statistics if we had to send men out to do it.

Mr. Morse.—Some of the inspectors have written that they will send reports in soon.

Captain McIntyre.—I have some statistics already collected from my neighbors, but they are not all I should like and therefore have not returned them. Some object to giving the figures because their vineyard is an old one, that they do not want it to go on record, for, next year, by grafting it will be in a different form. All sorts of excuses are given by them. You cannot appreciate that kind of work until you get out among the people and find out just where they stand. The information required is of a nature that you cannot oblige a man to give it; if he gives it at all it must be of his own good will. You may sit down with him in a corner and if he happens to have a glass of good wine in his cellar you may chat a little with him, and by argument may assist in overcoming his prejudices, and by a little adroit questioning, perhaps find out that he has a little patch of Mataro, or a little Sauvignon or Semillon, but you may have to give it up as utterly hopeless task. When I have completed my report to my satisfaction I will cordially give the informationt

Mr. Wetmore.—This is not a complain. against the inspectors; if they cannot get the information from the vine growers they cannot give it.

Mr. Estee.—I tried that when I was President of our club two years ago and I found the only way was to guess at it. (Laughter.) We have plenty of people who are afraid to tell what they have got. They say "If I tell you and allow it to be published that I have 20 acres of Mission grapes and only 15 acres of foreign varieties I could never sell my wine in the world, for I have to sell this for all Zinfandel." That is about the truth

of it and it is very difficult to do the work and seriously it is a very hard task and I can fully appreciate what Mr. Morse says. It is very difficult to find out from many people right in my own neighborhood ; they don't want people to know how many acres they have in vines ; for fear the assessors will find out, as if they would not find out anyhow. I never knew anything that an assessor would not find out.

Mr. Wetmore.—I am glad this thing came out to-night, for it illustrates one of the difficulties in running the State Commission. I know we have given more time and hard work to this one subject than almost to anything else except, during the last year, when we considered the matter of fermentation, and yet the public will probably think that we are not doing much. Mr. Morse has been all over the country, has made many long trips and conversed with many inspectors, and this is the sort of work done, and I am almost on the point of giving it up in despair. I think, as Mr. Estee says, that guessing is about the nearest you can get, and I always find I can guess nearer than the assessor's report. We can guess a crop nearer than the statistics by averaging the last year's crop, allowing a certain per centage of general increase, and, excepting under exceptional circumstances, we can come within half a million gallons for the State. Prof. Hilgard is here prepared to make some report of the work performed by him at the State University.

PROF. HILGARD.

I am not going to trouble you with a detailed recital of the work done, for that would take me a long time, and besides it is given in print—at least so far as it is ready to be printed, in the report lately issued from the State printer's office, of which you can find copies on the table and to which you are all welcome—and to as many copies as you want. I have in that report given the final outcome of the work of two years, with the beginning of the work of the third one. The reason why the first year, the season of 1883–84, is published so late is simply that I have been too much crowded with work to write it up. I have had more work than I could possibly do.

In regard to the nature of the work that we do I have explained it here before, but perhaps a little repetition—as some are here who have not been on previous years—may be in order. The work that we are doing at present at the State University, with the means that have been provided so far, is not on such a scale that it could be utilized directly in practice. We have too small accommodation, and whatever fermentations have been done have been upon a very small scale ; which on the other hand has been offset by more close and accurate observation. You may say of course that practical knowledge can only be gained by practicing fermentations on a large scale. Allow me to remind you in that connection, that it is very hard to make accurate observations on a large scale. The requirements of a winery, generally are almost incompatible with the close watching of points that influence the making of the wine previous to maturity. It requires a kind of watching which can only be done by those who can devote their time to it. There are a great many small points that have to be noticed to give the true determination of any experiment. An experiment is a question asked of nature, and if in asking such a question, or conducting such an experiment, the exact conditions are not understood, of course the information will be confusion worse confounded. Now we can approximate by watching on a small scale, what would be the result on a large scale by making allowance for the difference of conditions. The fermentation in a small package will, generally speaking, be accomplished at a lower temperature. That will correspond therefore to what would be accomplished on a large scale when the temperature is kept at a reduced point by a cellar which is cool, such as reported by Mr. Estee yesterday. In carrying on this work, it is intended for the purpose of demonstrating the exact nature, so far as chemistry can do it, of each wine and each kind of grape, and what characterizes the known varieties and how it may be changed in different localities. That is what we are trying to do so far. You are well aware that chemistry can approach only a small portion of the problems of wine making. You have heard that said, and a great deal of it is truth. So far as the flavor and bouquet of wine is concerned chemistry can tell you very little. That must of necessity be left to the taster, but the taster can taste some things of which the chemist can take accurate cognizance, and those are the things which to-day were given in the report of Prof. Rising. He to-day spoke of the tannin, sugar and acid contents. They are things that are demonstrable, and they are just as essential for the appreciation and proper constituents of good wine as the flavor itself; the bouquet we cannot determine and define chemically, but the amount of tannin that good wine ought to contain is well settled by practice and can be demonstrated by chemistry. For instance in the matter of clarets. It is a well settled matter that in French table clarets, which are usually used by those in the habit of diluting them with water, that they must contain about the proportion of two pro mille of tannin, we will say 18 or 20 ten thousandths of tannin and between 5 and 6 pro mille of acid, for the reason that unless about this proportion is observed when you dilute with water, as is done at the table, the wine will very soon lose its character, the tannin will disappear before the acid and the wine will appear flat. If the tannin is too small and

the acid high it will become rough and unpalpatable when diluted. It is therefore understood from a chemical standpoint what are some of the conditions of good claret. So with the alcohol percentage and other points. There is one point that is very difficult, and for want of time we have not made it and that is to determine the amount of glycerine. That is a troublesome substance, and as it is a matter of appreciation by the palate, in the estimate of "body," we have not indulged in that. It takes a great deal of labor to make such an analysis; there is a limit to the time of the chemist that can be employed.

The plan we have adopted for the past years has been substantially this: in the first place we have invited the sending of lots of grapes, sufficiently large to be worked to advantage in one lot. We desired not less than 100 lbs. and more if possible, and hope hereafter not to work less than half a barrel of must or wine. These are worked under a perfectly definite condition; the must is analyzed so that we know what it contains. The wine from the must is analyzed so that we know what changes have occurred in the fermentation. The temperature of fermentation is watched day by day; sometimes each hour, and for days it is taken three times a day. We therefore know with perfect definiteness at different times what are the conditions of fermentation, and when we note any irregularity in the fermentation we immediately proceed to another analysis to determine what causes that disturbance. Such practice would be very difficult to carry out on a large scale. This constant watching requires an amount of attention which is not usually given in a winery; it would be very desirable if it could be done, but for the present it is out of the question. This experimental wine-making has shown, as you have probably seen in the bulletins published, that there are very considerable differences in the same grape grown in the different places. For instance in the Zinfandel grapes grown in Santa Clara it makes a very heavy bodied Burgundy wine. The same grape in Napa Valley makes a light colored and light bodied claret. From one grape in a certain locality you may get 7 or 8 ten thousandths of tannin, and in another you get 16 or 20 thousandths from the very same grape. Thus by a comparison of their composition as far as chemical analysis can teach it, we can then make an advance estimate of the proportion of tannin, acid etc. in wines from different localities.

I have in this report, and in the bulletins heretofore published, given the results of the comparisons of different wines made at different times in the *same* locality. For instance, in the locality of Mr. Crabb, a number of analyses have been made of wines made in different years. In those cases, as they are on the same soil and treated by the same wine maker and a very good wine maker, we have reason to suppose that the wines correctly represent the differences shown by the several grapes in one and the same soil. These two points then, the differences of the same grape in different localities and soils and the difference between the different grapes in the same soils, are among the most important things we have thus far been working on. A very extensive series of comparisons of the latter kind was possible in the year 1884. There were lots of about forty grape varieties sent from the Natoma Company's vineyard. You will find a full report of these in the pamphlet that is now ready for distribution. They show what, for the locality of Natoma, are the chemical proportions and ascertained ingredients of these wines. Last year it was not possible to obtain fairly representative samples; I hope that in the coming season it will again be feasible. These approximate the general character not only of the grapes themselves but of the differences existing in different localities and soils. I give you this general explanation simply because you might not want to read up these details in the report. Those who are interested can look to it, and those who are not interested can look to other portions that do interest them. During last season as the grape crop was short, we were scantily provided with samples and especially from new localities. The lots sent in numbered about forty. We made 34 fermentations of wines and about 45 wines, ready made, were sent in to the University laboratory. These are not yet reported upon, but the general outcome is given in the appendix to my report. I call attention to the fact that last year the tannin percentage was increased in comparison with previous years. It was increased very much more than the sugar; that is where the sugar percentage was not greater than the previous year the tannin had increased about 50 per cent. That was confirmed in the case of Zinfandel, Cabernet and Black Burgundy and several other varieties that we compared. It shows in a general way—and the whole tendency of the analyses made thus far tend to show—that a high degree of ripeness in the grape and the high heat of climate tends to produce a large increase of tannin; that will be found abundantly illustrated in the report. It also shows that the valleys, generally speaking, produce wine poor in tannin in comparison with the uplands. In one case in Napa Valley it did not amount to three hundredths of one per cent; that was Zinfandel wine grown in the valley near St. Helena, and it had from seven to eight ten thousandths of tannin in three successive vintages. The hill lands with the same variety in a similar year had twenty-two ten thousandths. This is an important difference demonstrated by systematic analysis. I found a very interesting comparison in the neighborhood where my own vineyard is situated at Mission San

Jose. On Mr. Gallegos' vineyard, on valley land, the grape will contain seven to nine ten thousandths. This year, according to the general rule as stated before, it gave 12 to 13 ten thousandths; but we obtained from a small hill vineyard, not far off, no less than 24 ten thousandths. Here again we have confirmation of the fact that the valley lands yield wines poor in tannin, while the hill is much greater. This has been understood in the old country for years, though it has not had the same systematic investigation as it has here; we may claim some credit for that. The difference is so great that it claims the serious attention of those who are planting part valley and part hill land; for every one planting now is supposed to look forward to definite quality in deciding what vines he will plant, and the work done in this Convention is largely aiming to find out the plants that should be grown.

If you should take the Tannat, which is especially useful for its heavy tannin, or the Gross Blaue, or some other heavy tannin-bearing grapes and plant them in the valley you would be disappointed in regard to their tannin. If you want tannin plant in the uplands.

In regard to acid, it is very apparent that in the warmer portions of the State, in San Joaquin and Fresno counties for instance, the tendency to acid is greatly diminished. Mr. Wetmore has told you to-day—and on that point I agree with him—that a large amount of acid is conducive to sound vinous fermentation, and to the absence of milk sourness. I would therefore admonish those who have to plant in the valley that they must look especially to having grapes with sufficiently high acid contents. If you rely on the Malvoisie you are likely to be disappointed. That has been ruled out for making dry wines, largely because its acid is exceedingly low. I have known one with but two pro mille. It must necessarily be planted with some other acid bearing grape that can be blended with it. So with the Mission grapes, the acid contents of which I have seen as low as two pro mille, and you remember the acid contents of Claret should be five or six. There is very good reason therefore why the Mission grape alone should not be considered a Claret grape, and why it could not be used for shipping wines. It is so with the Malvoisie.

I will explain a little further one matter that I mentioned last evening, and which subsequent to my remarks was again set forth by Mr. McIntyre. That is the question of fermentation at a high temperature. I was exceedingly interested in Mr. McIntyre's statement, and also in those that followed. I think I may fairly state the impressions made on my mind in this way. Mr. McIntyre fermented at a relatively high temperature. Now as I remarked yesterday, and as all know by this time, a high temperature is not conducive to a rapid or sound vinous fermentation. A high temperature promotes on the contrary the injurious fermentations, the milk and lactobutyric, and all manner of mischief in the wine. All vinous fermentation is just as rapid as it can be made at a temperature between 60 and 75 degrees, according to circumstances. There is then no object in raising the temperature higher for the sake of accelerating fermentation, and generally the temperature is too high for the greatest efficiency. You sometimes, I suppose, have tried to weigh on a scale something that perhaps exceeds the limit for which the scale is intended. Perhaps you have driven a four horse team on to a Fairbank's scale that was intended only as a two horse scale. You have doubtless seen that scale jump either way—it would not weigh right; whenever you approach the critical limit it jumps, and you perhaps cannot account for it, but it is out of fix because it approaches too near the extreme limits. And I think that is just precisely what has happened in the high fermentations last year. For what have we heard from other gentlemen who spoke last evening? Mr. Estee says he was very particular in maintaining a uniform temperature in the cellar—he, as you know, has a remarkably fine, thick stone wall cellar. He said he had not the slightest difficulty in fermentation and that the temperature as a rule remained below 90 and he was very much scared when it did rise nearly to that point. I could quote several other gentlemen who worked under similar conditions. They had wine cellars in which the uniform temperature was easily maintained. I mention Professor Husmann, Mr. Drummond, Mr. Gallegos, Mr. Doyle. None of these gentlemen have had any difficulty in fermentations. The fermentation of highly sugared must of course was slow, but it was complete and there was no stoppage. Mr. Drummond wrote to me that he had no arrest of fermentation. He has got a solid winery, and so has everyone of the gentlemen whom I have mentioned. Now, instead of trying to explain the vagaries, as I might call them, that were experienced by Mr. McIntyre in his fermentation, is it not easier to try and copy those who had no difficulties? Among others I may mention myself. We had no difficulty at the State University in fermenting out the 34 lots which we had, of high sugar contents. We had no stoppage except in one case where by accident the temperature rose during the night. I will not discuss it any further but simply call your attention to what was said last evening. I will give Mr. McIntyre the fullest credit for the suggestion he made, about the conclusion that he has come to, that a man cannot tell when he puts the grapes into the tank what is going to come out of it, but that is an eminently unsatisfactory conclusion to work on, and if it is coming to that I think some

of us would be glad to pull up our vines and go into something else. We must know what is going to come out, where it has cost us money to put out the ground. I do not know that I need pursue the subject further.

I will mention one other point on which we made experiments at the University, but on which we have to experiment further. The commission has also made some extensive experiments upon the same matter. I refer to condensed must; must made according to the natural proportions from the condensed must be made by the Yaryan process. The sample I received was Zinfandel. It was late in the season and the first crop was not at command at that time. I need hardly enlarge on the desirability of making this condensed must on our part, for it is a mercantile product shipped as easily as lime, and which our Eastern brethren might use in the place of glucose in the manufacture of their wines. We can by that means ship to them what we do not want to ferment here, and they can blend the same with their grapes. I would chiefly send East the Malvoisie and Mission from the northern part of the State, and they might ferment it with what they have there. The basis of making the must was about 24 per cent. sugar. I do not like to make it higher, in order not to introduce unnecessary difficulties. I found, contrary to my expectation, that in the must that had undergone the drying process, that the fermentation started in as rapidly as in any other case, without help. That shows that the substances which formed the germ food, have not been hurt at all by the process of evaporation conducted at a low temperature, of about 140 degrees I believe, which is also the lowest Pasteurizing temperature. Evidently not the slightest harm had been done the germ food; and from the rapidity with which the fermentation went on, it appears that the germs themselves had not been injnred. We had one sample of the must that started to ferment in 18 hours after setting. That is about as soon as we expected it in fresh must. Other samples were started with fresh must which was already fermenting, and they hardly came out any sooner than the one which was pure and had no addition at all. We made further experiments with a view of determining the question whether, if this must was filtered, any material difference would result in the rapidity of fermentation. The must after filtration started in very nearly as rapidly as that which had not been filtered, but it did not come out as quickly, and was somewhat turbid; so that it seems that by filtration we are likely to remove some of that matter which is needed by the must if required for wine-making. I need hardly to remind you who have had defective fermentations, how glad you would have been if you could have had the use of condensed must, for you could have been carried through your arrested fermentations without trouble. There is one doubtful poiut about it which Mr. Haraszthy noticed the other day, and I am informed by Mr. Pohndorff that the same thing has been noticed in the experiments by the commission. that the fermentation is slightly affected by the lactic, like other wine that is very low down in tartaric acid. Of course it is hardly fair to judge from the result of fermenting this must alone. No one would want to make wine from it alone, and I do not think that fermented with other grapes, would impart milksourness. In regard to the character of the wines you will have an opportunity of judging, as I presume they will be tasted to-morrow, but I think it may be said in the case of Zinfandel, which, of course, is white wine in this instance, that the distinctive character of the grape is pretty well obliterated. I could not tell whether it was a Zinfandel or some other grape. I found, however, in the Penard Muscat, which Mr. Cone sent me, that the Muscat flavor is tolerably well maintained. I will mention here that it is a special caution given always as regards the Pasteurizing process that Muscat wines should not be subjected to if the Muscat flavor is desired. I was, therefore, interested in the fact that the evaporated must furnished by Mr. Cone had the distinct Muscat flavor left. I did not make a fermentation experiment with this, but I should presume the flavor would not be as strong as the evaporated Muscat. It is pretty well understood that the natural flavors of the grape are often destroyed by the Pasteurizing process, but if you want to destroy it heating is the best mode of doing it. There have been some other lines of work pursued at the University besides these fermentations which I will allude to briefly. You will recollect some experiments were made by the commission, and also at the University, during the past season, in reference to the efficiency of the supposed mercurial remedy for the destruction of the phylloxera. At the University and also in the Commission experiments, there was a unanimity of failure in the result, and the general impression was that it was not a success. Experiments made on a small scale had, however, impressed me with the fact that mercurial vapor for the destruction of the phylloxera was not the failure that on the large scale it was supposed to be; and that if it had failed on a large scale the fault must lie in the fact that vapor had not been formed at all, for if there had been evaporation the phylloxera must die. This was proved by experiments made by Dr. Bauer and myself. In a protracted investigation, which took about two months solid time, and chiefly made by Mr. Morse and myself, we found very plainly what had been the trouble; namely, that in the first place the mixture had been made with oil, so that each mercurial globule had been coated with oil and

could not give off vapor, or at least could not evaporate in any large amount. The second reason was that the mercury was very impure and contained so much lead, that in the test made we were only able to get a faint showing of evaporation, in a jar where it was fully exposed; while the pure mercury alongside gave off vapor in a few minutes, in some cases in a few seconds. That having been found as two causes of failure, we instituted other experiments as to what other reasons might have prevented its success. We then found that the soil absorbed a considerable amount of such vapor, and while the soil is absorbing vapor it cannot, of course, spread with any degree of rapidity through it; and while this absorption of vapor is taking place, it cannot get to the phylloxera, and it did not. This is a very difficult subject for experimental investigation, but Mr. Morse carried it through with great success, and we ascertained the amount of quicksilver vapor which would be rendered in with the soil, that is which the soil would absorb before the remedy became efficient; and we found it would be one-third or one-quarter of the total amount that had been used. Thus it would take so much more to make it effective. After we had ascertained all that and knew how to prepare the soil there was no failing at all in killing the insects. With the soil properly impregnated with the mercurial remedy the phylloxera cannot live, and before actually killing it will poison them so badly—salivate them I suppose—that if taken away they would not live. The effect on them by the preparation is curious; they do not run away, but stand up on their hind legs, or on their fore legs and die. We find them dead in all positions, piled one on top of another. But the main point is they do not run away, they stay where they are and die where they are. I think you may take it for granted that when the earth is properly impregnated with mercurial vapor that the phylloxera will die in 40 to 48 hours, and after the soil is once impregnated it does not make any difference whether it is wet or not it will stay right there. As to the practicability of this remedy I repeat what I said here in the published bulletin, that while I believe it can be made effective for the protection of newly planted vines in uninfected soil, I do not believe it can be made effective to protect either cuttings or vines already affected.

We have soil now under treatment at the University for the purpose of deciding the rapidity with which the mercury will spread. Supposing you have surrounded the soil with mercurial earth 8 inches deep and 8 inches on each side of the vine. We found that after the lapse of a week in the vineyard the insect would be alive within half an inch limit of the mercurial soil; but all would be dead within those limits and above the root as well as under it. We have now experiments under way which will show in the course of time how quickly the vapor diffuses. As far as we have gone I think it is done very slowly. We have a box two feet long which is packed full of earth. At one end of this box is the mercurial soil and separated from that by a gauze partition is soil that has not any mercury in it. We examine this from month to month and note the progress of the mercury evaporating into the dry soil. About ten days ago we examined the soil two inches from that partition, and after long prolongation of this experiment, we found a little mercurial vapor at a distance of two inches; but I think if we had had live insects at our disposal they would have still lived in that soil. It will ultimately diffuse over a pretty large surface, but the vine will grow ahead of the diffusion and evaporation. For that reason I do not think it will be a success as a remedy for infected vines, or badly infested soil. But I for my own part, at my own vineyard at Mission San Jose, having such faith in this, have left about ten acres of my vines unprotected, and if the pestilent insect ever gets within a hailing distance I expect to surround those vines with mercurial soil. It will cost about as much as grafting according to the experiments we have made, and so in that regard you may take your choice. The grafts I think will probably be the best of the two, but in the infested districts where the insects have not come and where they are afraid of its coming, I think it would make them fairly safe by using that remedy. We hope next season to have more extensive experiments and determinations upon a practical scale.

Mr. P. C. Rossi.—I would like to ask the Professor whether they have used any cheap method of separating the globule of mercuries without the use of oil.

Prof. Hilgard.—The division of mercury can be done in a revolving barrel with a cannon ball inside, which will effectually subdivide it in either chalk or clay. I wish to make an explanation in reference to one point which has not been very well understood. I mean the mildew remedy—the copper mildew remedy against the *peronospera* mildew of the leaves. The new point of this is, that while it was known that sulphate of copper, or bluestone, would be an efficient remedy against it, this substance was washed off by dew and rain, and repeated applications were necessary in order to maintain the immunity of the vine. The new point in this is that the copper compound is firmly on the leaves and is not washed off. I have here a bluestone solution, such as you will find referred to in the papers. For use, this bluestone solution, as you need it, is mixed with a certain preparation of slacked lime in the form called "milk of lime." It will mix easily. I shall not observe the exact proportion this evening in illustrating it to you. By adding

a little lime to this blue stone solution you will see there is a formation of a different color from that of the blue stone. We have here something that looks like blueish white-wash. This mixture is sprinkled on the mildewed vines, and a little drop of it on each leaf is sufficient to prevent, according to French experiments, the mildewing. And it prevents for the entire season ; it stops there and unlike some other remedies, it cannot be washed off or blown away.

Mr. Wetmore.—How will that affect the leaves that are growing all the time ?

Prof. Hilgard.—The French experiments seem to have shown that the splashing of the whitewash by the rain is sufficient to protect the new leaves.

Mr. Wetmore.—But we don't have any rain in summer.

Prof. Hilgard.—I will not discuss it now for the application is easily made at any time in summer. The mode of application is that you have a bucket of this and with a little broom or willow brush sprinkle it lightly over the vines, avoiding touching the grapes as much as possible. One application is enough. The reason against using this remedy is that it seems more expensive and troublesome than sulphur ; but when, as has been the case for the last year, you have to sulphur four times, the cost is not such a serious matter. I had to sulphur my vines at the Mission San Jose four times to keep them from getting mildewed. The question is whether one application of this at the time of the first sulphuring will not be cheaper in the end than it will be to keep the sulphuring apparatus going all the time. And further more this will not only do for use against mildew but against some other pests to the vine also. This is an ingenious application in the shape of whitewash that maintains its efficiency all the season.

Mr. Rixford.—Is it also a cure for the Oidium ?

Prof. Hilgard.—It is effective against any mildew yet discovered. This remains as I say good during the whole season. We are preparing to make extensive experiments at the University on mildews and also on the scale. Where one sulphuring would suffice I would not recommend to use the more troublesome applicatioon. But where three or four sulphurings are required I think that one application of this would be sufficient and therefore be an offset to it.

Mr. Wetmore.—Have you ever tried blue stone on the leaves in summer to see whether it burns them ?

Prof. Hilgard.—Yes and I find that in some cases with new leaves that it does some injury, but with the old leaves it does not.

Mr. Wetmore.—I have tried sulphate of iron in solution and it always burns the leaves.

Prof. Hilgard.—This new remedy has no such effect at all. It is perfectly innocent that young sprouts, which are so extremely delicate as to be killed by coal oil emulsion, are left unscathed by this. That is one reason it is so valuable.

CAPT. MCINTYRE.

I apprehend that in my remarks I was misunderstood by the remarks of Prof. Hilgard, but I am very glad he has made those remarks for it is important I should not be misunderstood in the temperature. He suggested that I fermented at a high temperature. The temperatures I was reading were the temperatures that were registered during the process of fermentation and had no reference to the temperature of the cellar, which we maintained about as we had done in years before, when we had no difficulties whatever with our fermentation when fermentations had gone on without stopping, or stopping in solitary cases. This last year however the North wind carried up the temperature of the grapes very suddenly to a high degree. As to the matter of not being able to deduce any definite rule, or not being able to tell what would be the result of a given fermentation under given conditions I am sure that I did not intend to say, for I firmly believe that given certain conditions which are fixed and known we can fortell what would be the result of fermentation, or the attempted result of a fermentation of the grapes. That cannot be otherwise. But the puzzle of this last year's fermentation is the same to me as to my friend Mr. Crabb, and others who met with the same difficulties. In years before we found that our fermentations began and went through without difficulty. This year, under the same conditions apparently they stopped. One tank would stop and another would complete the fermentation. That I was able to carry the fermentations through notwithstanding the difficulties it is true but it was done by methods of refermentation etc. and to Mr. Wetmore and others I am indebted for the advice which I followed, for I was enabled to get much good from their suggestions, and was enabled to get a complete fermentation.

Now I believe it is possible for us to tell just exactly what a fermentation will be, provided we know exactly the condition of the must and the condition of the atmosphere around it. We had less work when we commenced the vintage. The must seemed to be in a ripe condition, but three days of extremely hot weather seemed to over ripen the produce. For that reason we had too much tannin or too little; too much or too little acid; too much or too little albuminous matter. The year seemed to be one of surprises. The temperature in the cellar would remain at 73 or 74 and the tanks would go up to 90 or 92 degrees and go through perfectly, while adjoining tanks with 87 degrees were stopping. Now what was the cause ? Would not anyone be glad to know and yet we could not say. We had no data on which to base our reason. We could not tell what we were doing for the

reason that we could not tell what the conditions were in the must without a proper analysis which it would be impossible to have at that time. Later on we seemed to get at it by supposing that it was a lack of acid, for I found that by adding a certain part of tartaric acid to the must I was enabled to get a perfect fermentation. In other cases I tried tannin and got a perfect fermentation. In other cases all the remedies seemed to fail except the adding of fresh juice from the grape, that did not fail. One experiment I carried on that I did not care to. It was a package of Malvoisie that I intended to distill. It started in to ferment and stopped at 10 per cent. We crushed fresh grapes and added them and it started in to referment and went up to 90 and stopped at 92 at 8 per cent. We started again to referment it went up to 90 and stopped at 5 per cent. It was then drawn off in separate packages of 400 gallons each and about 50 gallons of fresh must added. The fermentation started again andI thought it was going through all right but it stopped at 3 per cent., the temperature having been up to 87 degrees. I drew it into 1000 gallon tanks upon the top of 150 gallons of fresh must which had been allowed to get into active fermentation when fermentation recommenced and it has gone through and apparently is all right to-day. That is why I say we are all at a loss. If we know the conditions we can tell what is going to be the outcome, but that we can tell what the conditions are to be with a strong, hot North wind I am very much in doubt.

Prof. Hilgard.—I am very glad that Mr. McIntyre agrees with me that we can ascertain these conditions, The chemical analysis is doing it all the time The accurate ascertainment of conditions will justify certainly the upholding of natural laws under all circumstances, and we can deduce by analysis what is necessary to sound fermentation. I must say however that these problems even in the old countries have hardly been taken note of. I am surprised to find that in some points the Viticultural chemical work of California is greatly ahead of the old countries; but especially in the determination of the condition of the nitrogenous and albuminous matter the matter is far behind. I think we can safely say that the changes in those particular matters are largely to blame for the changes in the conditions of fermentation. This albumonous matter I might say that is essentially the white of an egg and it is the germ food of the yeast, necessarily so. I have no doubt that it is at the bottom and the secret of these inexplicable changes. It was a very short time in which this high North wind brought this matter into a changed condition and perhaps converted this albuminoid into apeptome. Such actions are well understood, and it is simply a question of identifying them by proper observation. I am glad to hear that Capt. McIntyre is fully in accord with me in regard to the possibility of ascertaining definite conditions under which the fermentation can be kept straight, but still I think we ought to stick to what experience shows is the right road.

It has been shown irrefutably during the past difficult season, that those who have kept an even and low temperature in the tanks have as a rule succeeded, and those who have not done so have as a rule had difficulties. I think that is the sum and substance of what we have been hearing. I have had the curiosity to hunt up the record of a number of affected wines that were sent to me. Out of all the wines sent, 44 per cent were defective. I wrote to the producers to know just the conditions and practices that had been pursued, and those who gave definite answers, give the conditions which I think have caused the difficulties, namely, the inordinate rise of temperature in some part of the tank. I wish I had a blackboard here; I could readily demonstrate to you the parts where they get the highest temperature in the tank. Capt. McIntyre stated that he stirred the tank during the Foulage for the purpose of equalizing the temperature. I have stirred the tank thoroughly three feet deep and afterwards found that the temperature differed five degrees at the top from the bottom. I have found 85 degrees on the top of the vat and only 80 degrees on the bottom of the tank. and 100 degrees just at the point where the cap and liquid meet. So the ascertainment of the temperature is not altogether an easy thing, and that I I think is one of the things in which the Captain's observations may not be absolutely accurate.

Captain McIntyre.—The question seems to be just how we are going to keep the proper temperature to the finish. The Professor says those who have kept a low temperature in the tanks have succeeded and those who have kept a high temperature, or who have kept a high temperature in their tanks have made failures. Now what we want to know is how to keep a low temperature. We have no trouble if we keep a low temperature, but I believe the conditions of the grapes last year were such that the high temperature was absolutely unavoidable and could not be helped. The conditions were so abnormal that you could not control the temperature. No amount of stirring would keep it down. You could bring it down and directly it was boiling again. I tried it. I tested the temperature with the string thermometer which is considered the best, as it allows the must to pass through it and took it out and read it. I had one, two or three or four men on a tank continually stirring. I have taken out of one tank and put it into another receptacle. Of that which I took out I filled three other vessels, and out of the three, two went through and one stopped and the wine went sour after I got all the work

done. By persevering work all the time we got our work done but it could not be any guide, for under the same circumstances there would be a failure here and a success there, under the same conditions, the same temperature and the same stirring. The point is, is there some way by which we will be able to possibly control the temperature. Before this year I had thought it was a matter that could be much more easily controlled.

Mr. E. B. Smith.—In the remarks of Mr. McIntyre and Mr. Haraszthy last evening the fact was developed that there had been no stoppage where there had been blends of different kinds together. I think, as I recollect it, no one here complained that they had any trouble with tanks where they had blended different grapes. I know in my own case I carried the Mission through by blending it with Burger. If that is a fact probably that may be one of the means to remedy the difficulty, for by blending two or three kinds together you can bring in contact a grape that is exceedingly ripe with one that has a larger amount of acid, that is less ripe with a smaller degree of sugar. If that will remedy the difficulty it is important that we should plant such grapes as ripen at different times where we can bring together the must at different degrees of ripeness, and in that way correct the difficulties of fermentation. I believe myself that is our best remedy, and in my own case in planting my vineyard I had that in view. My vineyard is situated differently from any I ever saw. It is all hill and I have no kind of grape but what is growing on different soil with different exposure, and in many places the hill has a southern and eastern exposure, which is warm, and in another it has a northern exposure which is cold, and in every block or variety of grapes I have just that difference of condition, so that if one portion of Zinfandel is too ripe I have other parts that are not so ripe; and if all my Zinfandel are over-ripe I have other varieties that are less ripe. I think if that is born in mind in setting out the large vineyards, we may in that way possibly in a great measure correct the difficulties of bad fermentation.

Capt. McIntyre.—I noticed during the process of our fermentation that the grapes which were from our own vineyard where there was no frost, that is where it did not have any effect, that they were the most difficult of fermentation, while the grapes that I received from vineyards a little frosted and were not quite so forward when the North wind struck them went through all right. I believe it is due to the peculiar condition in which the grapes were at that time. Take the Grenache, with me they fermented all right. They were rather low, so with the Mataro and the Carignan.

Mr. Husmann.—I do not know that I can throw much light on this difficult and vexatious subject. I will simply relate my experience through five successive vintages and I can say that I have not had one case of defective fermentation during all that time. Whether it is due to the practice I follow, or whether it is due to the very good fermenting room which we happen to have, or the climatic influence I am unable to tell. However, the facts remain that of twenty-five different varieties of grapes that I have handled this season, some of them not very small quantities, I have not had a single stoppage or any trouble at all. I make it the rule, however, not to let my grapes get over-ripe nor too high a percentage of sugar. I generally aim to pick them when they are about 24 or 25 per cent.

Mr. Smith.—If you will recollect however during last season, during the very hot weather, the grapes increased in sugar in three or four days in a very great degree. It would be almost impossible in a large vineyard to have them picked at a certain stage of ripeness.

Mr. Husmann.—That is very true. That is one of my practices, and I simply say how I manage. Whether it is correct or not I do not pretend to say, nor whether it could be followed successfully in other places I could not say. I have been long enough in California to know that perhaps there is no other State or country that possesses so many climatic distinctions, variations in so short a distance sometimes as we find here. I do not pretend to give my neighbor five miles from me any advice based on the practice which I have successfully followed. In fermenting I crush my grapes generally the same day and we have a sound fermenting room which keeps an even temperature of between 65 to 80 degrees, seldom goes over 80, and I can generally keep it down to 75 by opening the doors and windows during the night, and keeping them closed during the heat of the day. After crushing my grapes I put them into the fermenting tanks and I stir them regularly about three times a day, and they generally commence fermenting regularly and evenly the second day, sometimes the first day and whenever I find that the must has an inclination to become too hot on top I stir it frequently, and if that does not answer I draw off some of the lower must, put it on top to keep as even a temperature as I can. In four days, sometimes five, my red wines are completely through, so that I can taste no sugar nor find any by the test. As soon as I can detect no trace of sugar I press them and I generally manage to make pretty good wines in that way. Let me make a few additional remarks and I trust I shall not become offensive to any gentleman here, for if any one shall examine my wine and could tell me of any fault he may find in it I shall thank him, for we are learning by our mistakes and all are apt to make them, and I am far from thinking my practice is less faulty than others. But I have found in a great many of the red wines here that they

are very dark in color, containing a great deal of tannin, but dead, lifeless to the taste, and the conclusion I came to was that the peculiar bouquet and sprightliness of the grape was sacrificed to obtain the greatest amount of color and tannin. I do not believe that much color or a great deal of tannin is gained by very long fermentation, nor do I believe that the wine can gain any after the violent fermentation is over, and the whole mass has cooled down, by remaining in the tank for ten or fifteen days, as some are in the practice of doing, being exposed to atmospheric influence all the time. I think that in a great many of our red wines, especially where we sacrifice the fine flavor and delicate properties of our wines to obtain a large amount of tannin and color, I do not believe that we even attain one of the objects, that is deeper color by doing so ; because I have generally found if I left wines in the fermenting tank they did not get any deeper in color but they lose in life and sprightliness.

Mr. P. C, Rossi.—The gentleman has said that he managed always to have his must down to 22 and from that to 25 per cent., and always had a good result. I would like to know in a case like the past year when the grapes ripened so quickly and contained from 28 to 30 per cent., how he would manage to keep down the temperature.

Mr. Husmann.—I think there are means at our command by which we can reduce the excess of sugar.

Mr. Rossi.—That is just what I want. I want you to tell of these means.

Mr. Husmann.—Add a small amount of water.

Mr. Rossi.—Should that water be added cold or lukewarm ?

Mr. Husmann.—If your fermentation is rapid it won't hurt to have it cold.

Mr. Rossi.—If in your experience you have always been so successful in your fermentations, and in lowering the must in the manner you suggest I would like to know if you never had any occasion to observe any sour wine following that practice.

Mr. Husmann.—No sir, I have not because it is continuously mixing.

Mr. Rossi.—Sometimes I have seen that practice and owing to the differing in the circumstances the wine has gone sour.

Mr. Husmann.—I do not see how that should occasion a souring, as long as the mass is fermenting rapidly with carbonic acid gas escaping all the time, I do not see how it could occasion sourness to the wine.

Mr. Portal.—There were a few points stated yesterday by the gentlemen who were speaking on fermentation, as to the condition when the grapes should be picked and crushed. I heard with very much surprise from one of the gentlemen that it has been the rule in France to leave grapes sometimes three or four days before fermenting. This is the first time in my life that I have heard such a statement. It is contrary entirely to all authorities and all practice of French vineyardists, at least in Pas Cruz where they make the fine wine. They take their grapes in at once, and even crush them in the vineyard. The statement is now made that they lay three or four days to cool. That I think is one of the first causes of our failure; if you want a good fermentation you must take the grapes at 22, 24 to 27 per cent., and ferment them at once. This is only a matter of finance, a matter of accommodation and facility for doing the work. Wherever they successfully make wines they have to provide for these necessities. They are so careful in France that the grapes shall be picked just when they are ripe that in the mountains where the peasants do not know just when their grapes are in the proper condition they are compelled by law to wait until the priests announce that the grapes are ripe, and then they must all pick them on that day. Why ? Because they know the importance of picking the grape just at the right time. If a man says, " I have not the men, I have not the time, and I can't afford to pick them all at once," let him lay the blame where it belongs, but I don't lay the fault on the country or on the wine. That must be understood and not throw the fault on the country for it is a climate that France cannot boast of having—a summer for picking grapes such as we have. It has been said that the temperature of the cellar, whether open or closed, built of stone or wood, had very little to do with the fermentation. I have heard however of no gentlemen who have tried blending grapes who did not have a fermentation. I found that with Grenache, Mataro and Carignan that I got a good fermentation, but that the Zinfandel alone was not a good fermentation, and those who have tried Zinfandel alone and have not had good fermentations should not discourage us for the future. If we attend to the requirements of the business we shall have good fermentation. (Applause.)

Mr. Wetmore.—Mr. Portal is unquestionably right about the practice in France of picking the grapes in the warm part of the day, and crushing them while they are warm, and crushing them immediately and almost as fast as they can. The only men that I have seen allow them to get cool are some of the Italians in this city, and then they get regularly mildewed, and everybody is laughing at them for doing it in that way. I had intended to talk to-night of the work that we had done for the purpose of demonstrating this same principle, but it is getting late. But I want to direct your minds to one or two things that come out of all this discussion. The first is that you will see that there is not anybody here that knows anything about what was the cause of the difficult fermentations last vintage. The next thing is that there is nobody to show us the remedy, except to propose, as Professor Hilgard says, to have

some analysis. Now these remedies that are suitable for the correction of the difficulties must be on hand at once, and to wait for an analysis is altogether impracticable. Mr. Shillaber telegraphed down to me that the tanks were sticking, and what was the matter. He did not expect them to stick and other tanks were going through. It was too late to get an analysis of the must. This analytical work cannot be brought to bear on the subject at the time, but there must be one process explained in advance as to what should be done. If Professor Hilgard can tell, in advance, what to do with tanks that are going to stick, why there is our remedy, and it might be of some account. If he could tell in advance whether there is too much albumen it might be of practical value. But he does not know and we do not know until it has occurred. At first it was suggested that there was not albumen enough in the wine and more was added. But that did not seem to do any good. Then we tried to find out what was the matter, and all this work had to be done in a hurry. I never went through such a siege in my life as I did at that time. We were in correspondence with wine growers all over the State. Last year the supposition was advanced by Professor Hilgard that we wanted more heat when the wine would not ferment. He cited a case at the University that would not go through for lack of heat. This year he would have a lower temperature.

Prof. Hilgard.—Because in certain wines, as I stated before, the composition of the grape makes the difference. In some cases fermentation is most active at 60 degrees and in some at 75 degrees. That is a well-known fact and it is not at all surprising that the different musts should have accelerated fermentations at different temperatures.

Mr. Wetmore.—There is no doubt of it, and one of our difficulties is the difference of the must. Mr. Smith cites a case from a certain vineyard where he always had trouble with the grapes. Professor Hilgard last year cited a case of a single tank that would not ferment at all, and Captain McIntyre cites cases that were all right in fermentation where the grapes were free from the blasts of the north wind, and others that fermented all wrong that were out in the north wind. Now, it is utterly impossible to devise a rule to tell grape-growers what to do in such cases. Professor Husman says he has had four years' of experience and had no trouble at all. Nobody else had any trouble in the last three years prior to this, and then nobody else had any trouble in the same district with Professor Husmann. He is right in a line with Mr. Estee who had no trouble.

Mr. Husmann.—I beg your pardon, nearly all of my neighbors had trouble.

Mr. Wetmore.—There are not many wine-growers in your neighborhood.

Mr. Husmann.—There are quite a number; there is Mr. Anduran.

Mr. Wetmore.—He is in Napa, and he told me that he had not had any trouble.

Mr. Husmann.—I know he had a great deal of trouble.

Mr. Wetmore.—Then it must be the grapes and not the weather for he bought grapes of others.

Mr. Husmann.—His foreman told me that they had ten tanks stuck in one day.

Mr. Wetmore.—The only thing I want to call the attention of our body to is the differences that result under apparently the same circumstances. Mr. De Turk has mentioned that he had no difficulty in Santa Rosa, while up at Cloverdale he had difficulty, and this under exactly the same process. Around the bay in this district there was very little trouble, and not until we got some distance inland where the climate was very dry. There may be something in connection with the locality, and the composition of grapes that come from certain soils. For instance, Mr. Telles reported on this subject during the time when we were all so busy, that on certain soils in Portugal they had difficulty in checking fermentation and on other soils they had not. I quite understand how that might be, that on one soil you might have a very vigorous vine, and on another a very weakly vine. But these difficulties ran in streaks, the singular part of the matter was that they stuck all over the State on the same day. We heard the report from Los Angeles, San Jose, Livermore, Santa Clara and Sonoma, and Napa, all in one week, all in one day. Now it could not be possible that it could be traceable to the cellars when it was so universal, and had never been so before. In some instances the fermentations went through in the worst cellars. There was sufficient evidence in Captain McIntyre's statement alone that it was not due to the temperature solely for one would go through allright and another standing close by under the same conditions would stick. In Mr. Wheeler's cellar he had tanks stop, and outside in the sun with a temperature of 110 degrees he had a tank go through splendidly.

We had a lot of this cow-shed wine, as I call it, made up in Livermore, wines that are made in cow-sheds, and it was good wine. Mr. Fowler fermented in an open shed, so did Mr. Black, a temporary barn that was simply up and down boards. Mr. Paris did the same thing; so did Mr. Osterhout. He fermented in his barn, and I believe it is open on one side Mr. Crelin did the same thing, and he had not very great protection there, and wherever stoppages occurred, we found, as a rule, it occurred in large packages. Most of the men who were making wine for the first time made good wine, as men usually do, for in

those cases they make a little, and as a rule make the best wine. That makes me think of a remark made by Mr. Rose last year. He said, "you have made good wine, or rather your wife has, it was Zinfandel, but you will never make it again; I always see them make the best wine first." This must be because of the absence of a large winery and big packages, and more attention being paid to it. I think the large wineries and the big packages cause us the trouble. Before the vintage I was urging the wine-makers all over the country to follow the southern rule of Portugal, to use a shallower vat, and have shallower fermenting must. I especially noticed the fermentations at Douro where the folks dance on the must with their skirts on holding them up to their knees, and they do not attempt to control the temperature, and they keep a fiddler playing away all the time. Mr. Estee partially attributes his success to following this shallow fermentation. Professor Hilgard says he had no trouble in fermenting. We did not have in our cellar in the city here; did not have any trouble at all. But we fermented all our musts in little packages. I went up to see Mr. Crabb when he was in difficulty, and from one of his tanks we drew out a small lot of wine that would not ferment, and then treated it the way we were then doing, and the wine went through splendidly, and we used the same operation on the tank, and it would not go through at all.

Mr. Portal.—I ferment in large packages of two thousand gallons and I had no trouble. The temperature outside was 100 and inside was 75 and 80.

Mr. Wetmore.—There are plenty of men that succeeded but that does not prove anything. Mr. McIntyre succeeded with some of his but that does not explain why he did not succeed with others.

Capt. McIntyre.—I had some 500 gallon packages that did not go through and alongside I had 500 gallon packages that went through.

Mr. Wetmore.—There cannot be any rule devised from the experiences of last year. I have thought of it every way and I cannot find an explanation. You cannot explain it on the question of soil; you cannot explain it on the question of sugar, because we have must that fermented out at 30 per cent. easy enough. You can see we exactly had the same trouble as they have had frequently in Spain and the south of France, and no scientist has yet explained it, and for which no known remedies have been applied. It is a new thing for us to study and what we need to know is the exact facts. We cannot advise people what to do unless we know the facts. But one way to learn is to go to these countries and ask them what they do under similar circumstances. One of them is to use shallow vats. I think the vat of the future in the valleys where we are likely to have must of over 22 per cent. will be so shallow that they will not carry must of over 18 inches deep. Instead of four feet I would have it two feet. You cannot get it too low for any practical purpose.

Mr. Husmann.—I would say that my vats are six feet deep. Not what I would choose but what I found on the place; I fill them full and have no trouble.

Mr. Portal.—I suppose you have read the authorities that recommend large tanks as giving better flavor, color and quality and ferment slower, that is provided the temperature is a proper one. In some places in France you know they ferment 5,000 and 20,000 gallons.

Mr. Wetmore.—I am talking of countries like ours.

Mr. Portal.—In Southern France, in the Roussillon district, they do it.

Mr. Wetmore.—They get about ten per cent of alcohol in their must; they do not average ten per cent.

Mr. Portal.—And the very varieties in which they get ten per cent we do not get much more, that is the Carignan, the Mataro and Grenache don't go much beyond that degree, and sometimes eight or nine per cent.

Mr. Wetmore—There are several further points connected with this subject that should be referred to before we adjourn but it is getting late and to-morrow we will continue the discussion. In the evening of to-morrow we will take up the question of national legislation. To-morrow morning in taking up the samples for examination we will refer to some of the brandies. This Convention must not adjourn before we examine some of the brandies that were made experimentally.

The Convention was then adjourned until the following morning.

FIFTH DAY.

AFTERNOON SESSION.

Friday, March 19, 1886.

The President.—I will begin the opening of this session by announcing to you that I have been requested by a number of the members of the California State Viniculturual Society to give them an opportunity to have a hearing here, and I have concluded that we would meet to-morrow at half-past one; that the meeting would be held under the active auspices of the California State Vinticultural Society, for the purpose of obtaining new members and discussing the programme that we laid out, that of foreign markets and legislation in general. The members of the Society think that they would be able to possibly do more service or that there would be an extended benefit by getting a more public opinion than comes direct from the Commission. I don't know

how true this may be but all the members of that Society, or those who desire to become members, will find a list here. I beg all of you to come here to-morrow at half-past one, as many of you as possibly can, and join that Association, and give it some new life. The field is large enough for work and those who are not members, or don't desire to be members, are requested to be present at any rate, so as to have as large an assemblage as possible. The request received by me is couched in the following language.:

San Francisco, March 19, 1886.

Arpad Haraszthy, Esq., President State Vinicultural Society :—Dear Sir :—The undersigned respectfully request you to call a meeting of the State Viñicultural Society, during the present sessions of the Convention of the State Commission, for the purpose of discussing measures necessary to the further increase of the markets for California wines and brandies.

Chas. Kohler.
Chas. A. Wetmore.
Geo. West.
I. DeTurk.
Chas. Wheeler.

Mr. Portal.—Then, I move that any gentleman who signed the last petition be allowed five minutes to express the object he had in signing it.

The President.—I do not think it is necessary. You can make a motion to-morrow and then explain it to the Society.

Mr. Portal.—I make it because some of us will not be here to-morrow.

The President.—Why, that will be the most important meeting of the session.

Mr. Portal.—Even by taking a quarter of an hour of our time, how many will go home satisfied. There seems to be some confusion. I am satisfied we have to work together or die together.

The President.—They cannot organize on one day. You have a new programme. Here are the by-laws. One of the directors is dead. Here is an organization which you see you have in your own hands. The President of that is myself. I must state that I cannot serve in that capacity. I have now more to do than I ought to have. We will have to postpone this subject until to-morrow. We will now continue the discussion of the subject which was discussed yesterday. I was unavoidably absent, which I very much regretted. I will call upon Mr. Wetmore to make some remarks, upon the fermentations of the last season, continuing the subject he was on last evening.

MR. WETMORE.

I was engaged last evening in making some suggestions upon the work done by our Commission and also at the University, which I would like to continue. I do not feel quite well nor feel in the mood for a proper presentation of the work that we undertook to do in the last year. I have been away so long and lost the train of the work, and since I have been home I have not been in good health nor have I had time to post myself upon what has been done. But before we leave there is one absorbing subject on which something more ought to be said ; that is, the one we were discussing yesterday in relation to arrested fermentations. This question is not a question of the past. It is a question of every year to come excepting occasional years. As I said a year ago, when the question came up of difficult fermentation, we are subject in California to exceptions, and those who remember back more than three years know this to be true. A good many thought they had improved in their methods of fermentation when the real fact was the climate or something else had improved and made easier the fermenting. There are sections of the State where it is always difficult to ferment and ferment thoroughly and I have never known any exception, but what caused the difficult fermentation is the problem before us. It came upon us so suddenly laat year and the season was so short, that one question after another arose in such rapid succession that it was impossible to do all that had to be done. It will probably take another year or two or three more years before we arrive at the bottom facts. It is so difficult to get correct information on the subject. One man thinks it is his method that saves him from trouble. Like Mr. Husmann last night, he detailed his method and thought it was that that saved him any trouble, but other gentlemen who had their wine "stuck" had the same treatment, there was no difference in the treatment, but before another year goes by we ought not to pass the time without jotting in our memory what did actually happen, for we are apt to forget, so that before any other difficulty occurs we can refer to our notes and refresh our memories. It was supposed by some that the high temperature in the fermenting room caused the trouble. That was utterly dissipated by the gentlemen who were here yesterday, and it is so well known that it is not worth discussing—that the phenomena took place in all kinds of cellars. None of the fermentations in our office were arrested, but those that we experimented upon that we did not expect to finish, done for the purpose of finding out whether they would stop ; that is, we selected some Mission grapes that were stopping at Stockton, and to see whether they would stop under other treatment, they sent them here to San Francisco.

Mr. Husmann.—Will you allow me to make a slight correction ? I think you stated just now that I said it was my method that brought my wines through. I stated distinctly here, and I believe everyone understood me, that I could not say whether it was the climatic conditions, the condition of my fermenting room, or the method

I followed, which carried my wines through. I do not wish to be misunderstood.

Mr. Wetmore.—I stated that the method he adopted was precisely the same that others adopted, so consequently there was no moral to be drawn from his experience.

Mr. Husmann.—You did state, however, that I said that I thought my method carried me through.

Mr. Wetmore.—If I did, I will take it all back, and say that you explained what your method was, and from such experience nothing was learned, for other men following the same method had different results. As to the size of the packages also, while in the main it is generally found that shallow packages ferment the best, yet there were small packages, as I stated here, that refused to ferment. Such a case took place at the University a year ago as reported by Professor Hilgard when a lot of must would not ferment at all. Such a case was found by us. Alongside of it, the same must to which we had added some tannin, went through excellently. The size of the packages therefore is not the controlling element, although anything that is known to assist fermentation will be of advantage to difficult ones. In some cases the fermentations, when they stuck, were aroused and got through. In others they would not work at all, no matter what you did. Even the addition of fresh must would not start them. So that the addition of fresh must was not in all cases a sufficient remedy. I believe, with Mr. Portal, that the blending of the different grapes in fermentation was, in a great measure, a precautionary advantage, for if the trouble arose at all, as we thought in the vineyard, it generally arose with certain grapes. So with three or four together we had a chance of having the difficulty pertinent to one overcome by another. I have no doubt that has something to do with it —the amount of sugar we have to account for. If they are blended, the good fermentations ferment fairly well with a high degree of sugar. What the trouble was, we tried to find out by experimental methods. At first it was thought that it might be due to a lack of albuminous matter, and in some cases the addition of that ingredient was perfectly successful. On others the same method was tried, and it would not work at all. Then, later on, by an examination of the sediment, I became satisfied that instead of there being a lack of albiminous matter there was really an excess. The experience of Mr. Pellet of the Napa Valley Wine Co. was the most suggestive. Following the rule laid down by Mr. Morel (who died however before imparting his process to anyone), he watched the must before stopping. When it was found they were being checked, they were immediately run off into another tank with fresh must, the difference of that being, that they did not allow the re-fermentation to take place on the old pomace. I noticed that in cases where the must was taken off—or the juice was taken out of some of these tanks that were stuck—they went through easily. Many of the wine growers told me that when their wines were stuck and they drew them off they fermented all right. The fermenting on the old must seemed to be the trouble. Where they had fresh must they had less trouble.

I suggest again, with the risk of being critizised, as I have every year, when I suggested something for study, and not as a rule, that this may be the cause; that owing to the climatic change that took place on every side, the germs that produced the fermentation were in an unhealthy condition, requiring something to put them back into normal working order. If that theory is true, it would account for the fact that in the presence of the old pomace in a large tank, by simply adding new yeast and new must we did not get a satisfactory result, in many cases, for the reason that the yeast was already diseased by what was already in there. There are a thousand ways of supposing how the trouble occurred. But this idea is also corroborated by the influence that the tannin seemed to have on it. We have tried a great many yeasts in the office to test them. Wherever we added tannin to the yeast in fermentation, we seemed to have a healthy sound, vinous development, and no disease. Now that train of thought in looking for the remedy was suggested to me, by reading the circular of a house in Paris that sells what they call oeno-tannin, a tannin derived from the grapes but how I do not know. We sent some time before the vintage to France and got a small sample, which happened to come in very handy at the end of the year, for we tested it to see whether their claim was correct. They claimed that it would not only increase the color, but assist fermentation or promote it, and the important use was not, as some supposed, in clarifying wines, but in fermentation. It was indespensable, they claimed, in the manufacture of wine from raisins, and especially in the southern part of France where they had a high degree of sugar in the must. After getting the material here, it occurred to me that we had something similar in the conditions of our must; a great deal of the sugar in the grapes had been converted almost to the consistency of sugar in raisins, which is known to be difficult to ferment. We therefore tried it, and in every case we had a fine healthy fermentation and no disease, but it was too late to attempt it on a large scale. We had not material enough—we had only a small lot. It was too late to suggest the general use of tannin. We however made experiments to see whether the ordinary tannin that can be purchased, made from nut galls, would operate in the same way. We took two tubs of yeast to see how great an amount of tannin it would take to arrest the fermentation, as we had been led

to believe that tannin arrested fermentation. We began by adding small portions, and kept adding until we got a pound and a quarter of tannin to a hundred pounds of liquid, made of water and sugar, a little cream of tartar and tartaric acid and the more we put in, the better was the fermentation all the time. We did not find a limit, as the material gave out, and we had something else to do. It has, however, thoroughly satisfied me, by our many rapid experiments, that there was no danger that the use of tannin would check fermentotions. I learned in France when I was there in 1878 that even ordinary tannin was coming into use as a substitute for gypsum. I wrote about it at the time, but not having had these difficulties to encounter for the last three or four years, it partially escaped my memory. I believe in that one item alone you have got your remedy. In most of the grapes, where there is a high degree of sugar, there is a deficiency of acid, and I believe that the varieties of grapes that are known to be difficult to ferment, ought all to ferment by the addition of tannin. We ought to try and get the pure wine tannin, still I do not think that the nut gall tannin is objectionable, for after using it we seemed to lose all trace of it.

On this subject I dont think books will aid you much. A few years ago I thought there was a good deal in the scientific books on the subject of wine making that was clear and distinct, but the more I read them, the less I find their deductions to be true. So I read in a well known work that the albumen goes down with the precipitate. I used several glass jars to see what the effect of the precipitate was in the bottom, and the wines that were lowest in tannin had most in the precipitate. The addition of the tannin disappears to the taste and produces a perfectly bright and clear wine.

The President.— There is one mechanical reason why it would be less in the bottom than otherwise, that is, because the tannin has the power of contracting the sediment.

Mr. Wetmore.—I noticed we had not as much lees in those that we put the tannin in as we did in the others. It may have been still in the pomace, and less there. I am however satisfied that that is our leading remedy, as a precaution, and it is a good one, anyhow. As I explained yesterday—there may be some here now that were not here yesterday, and I will therefore re-state some of the things I then said—the effect on the color is peculiar. The natural tannin of the wine produces the color. It is so intimately associated with the color, that in adding tannin, you clarify immediately if you do not want to reduce the color. I think that is coroborated by the fact that I found in many cases where the wines were of a deep color, that by frothing they would run over, and a great deal of color be lost. I put that foam into a re-solution of tannin and it was all dissolved.

The next thing I found that seemed to show the line of remedies was, what Mr. Crabb suggested the other day. It was one of the last things to occur to him during the vintage, that we crush our grapes too much where there is a high degree of sugar. In all cases where I have seen but little crushing, I have seen the least trouble in the high degrees of wine. The lot of wine that went through so evenly for Rollo Wheeler was not crushed at all. There was 26 per cent. sugar and it stood in the sun where he said the temperature in the must went up to 110 degrees. Up in Livermore the wines that were fermented there, by those who were making their first wines this year under the most favorable circumstances—none of them having a decent cellar to work in, were mostly simply stemmed, and but slightly crushed. Why that operates so I will not undertake to say. It may be by reason of the pulpy matter being distributed so far from the must, and the juice being distributed so evenly through the pulp. The fermentation starts more gradually, but I won't undertake to say how it happens, but such seems to be the case. Then a little cream of tartar, I believe, in many wines, especially in those which on analysis show the probability of being a little light in acid, such as the Mission, would be of great advantage. The highest authorities on the subject of live germs say that potash is the essential element for the life of the yeast plant; without it you cannot ferment. The addition of cream of tartar is reasonably assumed to be a good thing, for those who ferment in tanks that have had cream of tartar sticking around the sides seem to have good fermentations. Tartaric acid in wines that seem to be deficient is also advised. I know some who have tried more objectionable remedies, which I would not recommend, but they were very useful to study as experiments to understand the action on the yeast; for instance, in some cases I found a little sulphuric acid assisted. The sulphuric acid is taken up by the potash in the wine and forms sulphate of potash. If it is not in excess it will not stay in the wine as free sulphuric acid. How that operates to benefit the wine I do not know, but sulphuric acid does operate to advantage, and especially so in wines of high degree. I had, this afternoon, a little yeast here to show you an experiment. To one lot I added a little sulphuric acid and left the other without, and you will find that sulphuric acid does not stop fermentation. The influence of the acid, however, over the health of the yeast, seems to be the important thing. I find in Bassett's book, in the year 1852, upon a discussion dated that time, where he was first giving his views to the public about fermentation, or when his views were first promulgated, that he does not believe in many germs, but in one germ and the different forms of disease he considered to be the result of

the diseased forms of that germ. He demonstrated very satisfactorily, and I have tried his experiments, that where the germs were assisted they would not run into diseased forms. If you take any ordinary yeast and put some chalk into it you get a lactic fermentation. It stirs the life where the diseased germs are. While the yeast germs were active the others did not act at all. It was only in the case of their being diseased that the trouble occurred. This is partially corroborated by the difference after our first rains. We had evenness of fermentation up to our first rains, but as soon as we got grapes after the rain, the acetic fermentations started in, and we had trouble with our experiments. Wine from Cloverdale that was shown yesterday, but which is sound, started at once with the acetic fermentation. We sprinkled chalk on it many times, and it seems to be all right now that it has gone through, indicating that there was something wrong in the development of the yeast. There is too much faith given, I find, to the idea of the action of the yeast as usually understood. It is often assumed that Pasteur has explained all these things. He has not done anything of the kind. He has only explained that under certain forms of development, or changes in wine or must, at different times, certain germs are found; for instance, he found that the lactic fermentations was produced by certain germs, and that is all he found. He does not say anything more about it. In his argument on the mycoderma vini and the mycoderma aceti he finds that certain wines go to vinegar by the action of the germs that can be found there. The treatment of white wines that are intended for Sherries, with the proper amount of tannin, such as is gotten from the seeds of the grapes will probably very largely preserve it.

As I was saying, when you come to examine the books of all those who have written on the subject, you will find lots of rules that are in conflict with others that are based on the opinions of the man who writes them, and not on scientific investigation. You will find in the books that must wont ferment with 36 per cent. of sugar. We have fermented the condensed must this year with 35 per cent. You have been told that you cannot ferment out more than 14 or 15 per cent of alcohol. We have fermented out 16 per cent, and how much more we might have I cannot tell. We have been told that fermentation will stop when there is 20 per cent of alcohol. There are cases where actual verification seems to upset the theories. Mr. Haraszthy was telling me of a case where the wines would not ferment themselves, and then by the addition of a little water, they will referment and turn to vinegar. These are difficulties that are not explained. Our difficulty is, that the world is confused with rules that have no foundation except in the locality from which they emanate. In a certain place you can do a thing that in another place with the same grape you cannot do. Pasteur does not pretend to explain why the Pinot grape would turn to vinegar and Trousseau wines would not. It occurred to me to try whether our Trousseau would do the same, and I cannot make the vinegar out of them to save my life. I find that property belongs to grape, but what that property is nobody seems to know. The reason of that probably is, that in Spain and the south of France and Italy, there has not been, until recently, any real research into these difficulties, and the books that have been written upon the subject have been wrttten on the Rhine in the district of Burgundy and Bordeaux, where the summer rains make the fermentations easy. We have to learn something from practice that we cannot get from reading. We met a gentleman who was engaged in trying to restore some of those wines that we were trying to get through, a man from Sitz, and he did it with a pretence of a great mystery. We found, on examination, that his whole secret was in mixing and pumping, and the wines went through readily. His practice was with wines that were not going through to mix those that contained one per cent of sugar with those that had three per cent., and pumping them over and over, and working them in that way. When I had asked some of these Frenchmen as to what was their practice in the cellar they said that they whipped them and whipped them. They gave them a severe whipping, as they termed it, and keep it up all the winter, and that kind of disturbance of the wine seems to break up the wine into its element and complete the fermentation. So that I should say the proper thing to do immediately after such a vintage as we have had, and nearly all our vintages, is the frequent racking during the winter, for we save by this the difficulties of a little unfermented matter in our wines. The racking of wines, I believe, will have to be followed a great deal more frequently than has been the custom. At our little cellar, on the 4th of January, before I went away, I observed that about four or five days before a rainstorm, when the wine was perfectly clear, a clouding over and muddiness. I observed the same thing in the cellar under my house where I had six or seven hundred gallons. I observed the wine became cloudy, indicating climatic changes. It is reasonable to assume that the changes of last year injured them in some way. I have observed, every time we had a rainstorm coming on, the same change in the fermentation. In other words, we have during our winter a succession of so many springs, so that in the spring time, just as the weather has changed, when our wines begin to start up, they get cloudy. The wine should have been racked before that

time. Now, prior to that, in the winter, there are several changes different to those of France, and after every appearance of muddiness, I think we ought to rack. This racking of the wines in the spring, most of them, I think, will be omitted during the coming month. Just as soon as they settle down and the weather becomes clear, or soon after that they ought to rack again. In France they have a general rule to do it in June; then in August, regulating it by the action of the sap in the vines, for when the cessation of the sap takes place, it is well known by the vine growers that it is time to rack. This occurs usually in August, the latter part of August, when the leaves are getting brown the wine is becoming muddy again, then repeat the racking. Then just before the rains, rack again and keep that up. We have yet to construct our rules. The French have theirs already established. It is a good rule to rack after one of these disturbances and before another. The reason of this lies in the wine, for it is within itself that it creates the trouble. There are more or less dead germs, diseased, and it is from these diseased germs we mainly find the diseased fermentations.

The experiments that were undertaken in regard to sherries we believed would be of the greatest importance. Sherry as you all understand is wine put into a cask and the bung left out so that the atmosphere can work upon the wine. The cask is never filled as for other dry wines. Without the action of the air you would not have any sherry. A large part of the wine however, would turn to vinegar under that treatment. Now, experiments show that from the same ground the product of one vine can be treated in the manner I have indicated, and another cannot. It is consequently purely a matter of experiment, to find out which varieties are suitable for the making of sherries. There are however local causes that of course influence the work. Last year I saw a report of wine from Eldorado county; Zinfandel claret that was kept for eight months on tap without any sign of sherry being formed. It seemed to be a district that could naturally keep an ordinary wine a long time. Dr. Stillman told me of a sample of second crop of Zinfandel, which though he had had it in an open shed all the time, and the cask not full, did not spoil. The same wine in one locality will go to vinegar where others can be kept.

We have undertaken to test some of our products that seem to bear a relation to the sherries of Spain. The first was our Golden Chasselas, which gives excellent promise. Verdelho we know will make good sherry. We have also tried some Sauvignon. Colombar seems to have a peculiar tendency to keep in that way. Those that we succeed with would be suitable for planting. I have some wine on exhibition, I do not know whether it has been tried or not, that I have kept for two years from a white wine made by Mr. West at Stockton. It was given to me with a couple of barrels of wine to use for my men. Part of it I used, and then I found it would not turn to vinegar by exposure, and I have moved it around considerably. Finally before the fall, as it was getting into a drinkable condition, I fortified it, but before that it had not been fortified at all.

I mentioned this, for it is a line of industry that has not been touched at all. This is a country that ought to make good sherries. What you have to do is to take some of the wine that you have made, which you think has somewhat of the sherry properties, and leave the bung loose, and put the cask in a place where it gets plenty of heat, but not too much. Put it in the kitchen near the stove if necessary. I caution you however, if you undertake these experiments, not to be frightened if you have some little active fermentation. It all disappears. I had that experience, and at one time thought that my wine was utterly spoiled. Now it is truly delicious and of a fine flavor. Another thing I noticed, probably incident to the cramped quarters of our office. We made a lot of wine under the same difficulties that Prof. Hilgard did in small packages. It is a great deal of trouble to do it in tanks, and this year we tried in tubs. At the time of our last convention, we found several packages that positively smelt of vinegar, and we rejected them. All we rejected we put into a passage way, for convenience, we supposed they were utterly ruined and sour. They lay in the passage way unnoticed for want of time to dispose of them, and we did not think to look at them until this summer. We then brought them out and found them in perfect condition with no trace or smell of vinegar. I find that state of affairs also referred to in one of the books which I have read on the subject—that such manifestations are found elsewhere. It is not necessary to be scared if you find a little vinegar formed. It may form and cease, and the excess of acetic acid will disappear.

The President.—Did you notice that in more than one grape?

M. Wetmore.—Yes in many.

The President.—Did you have it in the Mission?

Mr. Wetmore.—Yes.

The President.—In Malvoisia?

Mr. Wetmore.—No I did not try them, but in the Trousseau and Zinfandel.

The President.—What was the strength of the Zinfandel?

Mr. Wetmore.—22 in sugar.

The President.—That did not change?

Mr. Wetmore.—Did not go to vinegar. It seemed to go somewhat and then came back.

The President.—Did you test it for acid afterwards?

Mr. Wetmore.—No sir.

The President.—Could you drink it?

Mr. Wetmore.—Yes.

The President.—What was the temperature, the mean temperature during the time it was exposed?

Mr. Wetmore.—Between 60 and 70 degrees. I mentioned my own experience in the matter, and what I have read on the subject of other peoples experience, and I find it is not an uncommon thing. I ought to say of course in this connection while I am talking about our experiments, that the actual work of our Commission was done by my brother all the time. Mr. Wheeler, the Secretary, was unavoidably absent, and my brother came in as assistant to take his place and carry on the experiments, and he can tell more about the details than I. He has all the records. Everything however that came up of a difficult nature was brought to my attention and I was consulted about it. In connection with our sherry experiments, in trying to find wines that can be made into sherries naturally, we have taken a gas stove and put it into a small room and heated the room; at first, we brought the heat up to about 130 or 140 degrees, then allowed it to fall to 100 or 110, and kept the wines in that room from 25 to 70 days. We have a sample here of the product, not to show how sherry can be made in a short time, for by leaving them in a heated room for a week as we have done, they show the sherry characteristics, the Verdelho particularly, but the object was to ascertain while we were attempting to make sherries by the heating process which were the most promising, the Verdelho is promising and I think also the Golden Chasselas. This is a line of experiments which ought to be conducted by wine growers all over the State, for it is valuable to them. Take for instance the foothills, where the wine growers have poor facilities for taking care of dry wines, if they could take care of sherries it would be very simple wine making for them, and a relief to a very large area, and very much easier than trying to practice dry wine making under their disadvantageous circumstances. And there is a positive market for good sherries, in the East it was repeatedly asked of me, "Have you any good sherries." That was by people who travel more or less, and know what the fine Spainish sherry is, that is produced by the natural process.

Mr. E. B. Smith.—Have you had any experience with the Mission?

Mr. Wetmore.—You might make a good common bar-room Sherry out of it, but for a fine table Sherry it has not the bouquet. The ether is not in it.

Mr. Smith.—I saw one lot that came from Elk Grove, from the Sacramento valley. It was kept in a shed and it developed a very strong Sherry flavor. When I was living in Sonora, I sent up here to get a keg of California wine. Some of it was laid away in bottles for two or three years, and after a year or so it developed a very strong Sherry flavor.

Mr. Wetmore.—The Tannic wine, so-called, which we exhibited yesterday, ought, I believe, to attract more attention than anything that we have done. The manufacture of this tannic wine can be accomplished by two operations, first, by adding imported tannin, or instead of using that you can use the natural tannic that belongs to your grapes, dissolved in a little spirits. How to prepare this to the best advantage we cannot state without a little more experience, for it is only a matter of recent study. I believe, however, that washing the pomace with a high degree of spirits is the better method, but we are in doubt as to whether we would not lose the color and the flavor by getting too high, so we washed the pomace in proof spirits. The higher the degree of alcohol the more tannin can be dissolved. Somebody by experiment can perhaps find out how to get at the virtues of the pomace. In some cases, probably, all you want is tannin, in other cases you want tannin and color. By using this in your December rackings on your wines, to help clarify them and carry them through the spring racking, then by adding a little more in the spring I believe you would have the soundest wine in the world.

Query.—Would you use that wine before racking?

Mr. Wetmore,—No; suppose you rack in December. Mix it after you rack your wine, to put it in a sound condition. But still further clarify for the spring racking, and then do it again before shipping. It takes such a very small quantity. I have tested it at the rate of one bottle of Crabb's Black Burgundy that we made, to a barrel of Trousseau Port that did not seem to have the tannin required. I used that one bottle for fifty gallons of wine, and it was entirely changed, and you would not have known the wine again, and it seems to cause a very agreeable, pleasant astringent taste. The way it should be done in that line of work is to find out yourself the best pomace to be used for any given quality. For instance, if you want to add a positive Black Burgundy flavor to the Zinfandel wine, it is easy to use the tannic wine of Crabb's Black Burgundy, but if you fortify a high class wine as the Cabernet, if you find that it has not tannin enough, you might take some Verdot that belongs to the same family; but if you have a strong wine like the Tannet, you might add the Cabernet flavor. In that way you could save a great deal of the material that otherwise gets away in the waste pipe. In its introduction, of course, a great deal of that material would have to be obtained where such good pomace is to be had. They can be easily made on demand. If I had a vineyard in which I had nothing but the Zinfandel, I would go to

another vineyardist who had some good pomace and get what I needed, and if he could not make it fresh and nice, I would ask him to fortify it. But don't let any stems go in. Mr. Crabb made a considerable quantity of it. He took the head out of a barrel and packed it tight, leaving six or eight inches above the pomace, which he filled up with spirits. You can then leave it and by tasting, ascertain when it is in a condition to use. The instructions I get from the books say to leave it all winter, but I apply it in the spring to get the wines into a condition for shipping.

Query.—Is that the fresh pomace ?

Mr. Wetmore.—Pomace after fermentation. For sweet wines it is still more important, for a larger part of our wines in this State are made out of grapes that are deficient in tannin, and that is probably the reason we had so much difficulty in handling them, and that more especially is to be said of the Mission ports of the southern parts of the State. They have to be fortified any way, so that you can apply this material very liberally. To illustrate, for instance, a man has nothing but Mission for making his ports; he could contract with somebody to make him up a lot of fortified pomace, and send him down the material to fortify the Port wine. Add only in the beginning just enough to check fermentation, and then in finishing afterwards you would get the requisite amount of flavor, color snd tannin and improve it immensely. I believe a man who does that would have a great advantage in using more or less cream of tartar in the wine, as they seem to be deficient in the cream of tartar. I think if this line of study is followed out the next year, the State will gain more than out of anything else we have ever done. There will be no excuse for any man's sweet wine to be lacking in tannin or clearing properly, and there will be no wines in the springtime if it is properly treated that are in danger of disease by spring fermentation. I think it is safe and will solve the whole question of the tannin.

Mr. E. B. Smith.—Do you think this tannin is desirable in white wines ?

Mr. Wetmore.—Yes, sir; but in a great many I would not; no. How to determine that I cannot positively say. There were so many things to be done, we could not accomplish all that we had in view. One of our projects was to save the seeds of the white grapes and wash them out of the pomace, and then put alcohol on those. If you put the alcohol on the pomace itself, skins and all, you are apt to get some bad color in the wine, I think. For white wine until I knew the material could be had in nice condition, I would rather use this oenotannin that is used in Europe.

Prof. Hilgard.—There is just one point I want to mention; does this give color when wanted, as well as tannin. According to my conviction in at least four cases in which I made experiments, there was not a trace of tannin, that is, not more than was left in the pomace after I started it ten days before. Now, the washing out of the kernels would, in very many cases, allow the material to be used when it would be improper to use the pomace. It should then be kept in mind that after the fermentation is over, the tannin that is gotten is derived from the kernel and not from the skins, and that being washed out, you can regulate the matter and suit yourself in regard to the color. If no color is needed in the wine, I should think, after extraction of the suitable matter on the pomace, it would be better to use the kernels. There is no difficulty in getting them out.

Mr. Wetmore.—I have no theories unless I have a demonstration. We have tannic wine here which you can examine and see whether there is any bad taste. They have a color, and tannin, and have ran high up in tannin. Mr. Crabb made this wine largely. We urged him to make it, and told him we would take for the Commission all that he might have to spare, but when he got through, he found that he hadn't any to spare but small samples; he wanted it all. He could not spare any. Mr. De Turk tried the same thing, and he had equally favorable results. Mr. West tried it in Stockton on the Petit Bouschet and found it successful, and after running the alcohol off, he tried it again for more tannin. It takes a good while to soak out the tannin, and he found that the tannin was there as proved by his experiments ; I have not seen one failure except where it was not selected. The pomace of the Cabernet Sauvignon, and the Verdot, and the Grosser Blauer, these varieties will give very abundantly both of tannin and color. We showed tannin wine yesterday from the Petit Syrah, that I should think is an excellent thing to put in the wine. It is a nice drink of itself. But a part of it with the alcohol will disappear. It is not a serious defect, if we get the right, as we ask, to fortify these wines. After drawing off all you can get and pressing out what you can of the spirit, then take some weak sherry or some wine that wants a little more tannin, and run them over it, and keep it for the heavy casks.

The President.—For years, up to within a certain time, about 2 years ago, I always used to buy the Feher Szagos, to use as a tannic wine to clarify my white wine. It is always fermented on the skins. I got it up in the mountains. The Feher Szagos has got a great deal of tannin in it, and after the wine was fermented, it could be drawn off separately, and then a tannic solution for mixing with the wine made on the skins. It is noticeable for its astringency if it is only fermented on the skins.

Mr. Wetmore.—You might let it macerate on the skins and then use it for the heavy wine.

Mr. De Turk.—To promote fermentation, how would it be to take the seeds and boil them and extract the tannin and add your fresh must ?

Mr. Wetmore.—We tried that and did not get any good results. Mr. Crabb crushed a lot of seeds, and the moment you put water on them, they turn white ; there was so much oil in them. I do not think the seeds ought to be crushed. I read some advice on this subject. I found that these things that are new to us are really old. That book recommended the crushing of the grape seeds and the putting them in the white wine. I find in the Spanish Cantons that they take the seeds and put them in the Sherry. Mr. Kohler told me that he always put a bag of seeds in the wine. These things are not new at all, but they are not generally known.

I want to refer to a matter that came up last night, that might lead to some misunderstanding. When I remarked that we did not know anything about this trouble last year, I meant what caused it. We have not yet arrived at any conclusion. We cannot find anybody in the world that has. I have studied and hunted and cannot find any theory. I did not find it in the French books, that they even treat on this subject of checked fermentation, although they are commonly known. I enquired of experienced men, and they know nothing about it. Mr. Pohndorff last year was describing the Governo system in Italy, which was by the addition of fresh must in the spring. Knowing what I do now, I would make the guess that it was the process of re-fermentations, trying to help the wines that did not go through. I guess that is something that they have found. The use of gypsum in all those hot countries was to help clarify the wines, probably on account of their deficiency in tannin. The use is still resorted to on the Mediterranean coast, to help clear the wine, but it is not a generally understood method. It might be done on common wines. The use of water has been tried. I think it was in Crete, where they used resin in the wine. The old Romanists are said to have preserved their wines by essential oils, which are highly fragrant things. In other words, all through the country, there has been trouble. In Algiers they have had trouble. From the Cape of Good Hope, they have sent to Europe to get somebody help them make their wine, perhaps having had a little more experience.

I am often called upon by those from other countries who believe that they are experienced wine makers. I have had at least half a dozen young fellows from Germany, pretty intelligent men, who were led to believe in their own country that they knew all about it. The very first questions I have asked have staggered them. For instance, I put the question to one of these young men, I said, "What would you do if your must was 30 per cent. ?" "Why," he said, "I would ferment it." I said, "Do you think there might be any difficulty ?" "No," he replied, "you put it in and ferment it like any other." (Laughter.) I asked another man, "How do you make Port wine ?" "Well," said he, "I cook it." The difficulty is that the class of men who have been teaching us to make wine in this State have not had any experience whatever in countries like ours. There are a few men scattered around here, like Mr. Morel, who had a long experience in France, went through Algiers, and was in other hot countries, who are successful in their fermentations. But Mr. Morel was a gentleman who kept his secrets to himself, and died before imparting them to anyone else. I met a gentleman this year, whom I believe knows a great deal about wine making practically in Spain and Southern France, and he told me that they had had these troubles. He surrounded himself with a great deal of mystery as to how he treated it, but when we found out, we learned that his practice was to add tannin and cream of tartar. Others work them over.

There are a great many other little points that the Commission worked out during the past year, which I shall not touch upon now, but will proceed to read a letter which I have received from New York, as it touches upon the matter set for discussion to-night. I have also a letter from Congressman Green, who has introdnced the bill for our Viticultural Commission, and the wine growers of the East. He introduced the bill a week ago last Monday. Congressman Green is an enthusiast in wine growing and owns 140 acres in North Carolina, and publishes a little pamphlet that he circulates among the members to stimulate their taste for wine.

The organization effected in New York, in the preliminaries of which we took part, was subordinate to the organization of the National Wine-Growers' Association, and to prepare for a convention to be held in Washington by that Association during the month of May, it being estimated that about that time our bills will be on the calender, when the wine growers from the different States will have an opportunity of soliciting their Representatives in regard to them, and at the same time interest the public in regard to our work. Mr. Clayton, who is Chairman of the organization in New York, writes me as follows :

Mr. Chas. A. Wetmore, Chief Executive Officer, State Viticultural Commission of California: DEAR SIR:—Our Committee on organization have read and discussed the bill for the suppression of the manufacture of bogus wines and we agree in the opinion that the points covered by it are

practically all that the real wine makers and grape growers need concern themselves about. If it can be intelligently and honestly enforced, the fabricators of the abominable stuff that has brought disgrace upon the name of American wines and choked and demoralized the markets for the past two or three years will realize that the judgment day has arrived a little ahead of time. If the bill passes and becomes a law it will mark the beginning of a new era in American viticulture and open the way to such a development as will soon make it one of the grand industries of the country.

Considering it from this point of view, as we step upon the broader plane, it may not be amiss to enumerate the advantages that will accrue to the grape grower by thus widening the area and volume of consumption as a result of this law.

There are first, the increase in the demand for grapes for wine making. The bogus wines (viz, wines made without the use of the grape) constitute one-third of all wines offered, both foreign and domestic; brushing these out of the way the demand for grapes will increase one-third and increase the demand for wines by reason of raising the average quality of the product.

Second—By increasing the means and producing power of the grape growers the spirit of enterprise evoked will develop new uses for the grape. Such as making jellies, jams, marmalades, besides raisin making which is already established,

Third—There are two other uses to which I wish to direct your attention specially; one is the application of grape juice, fresh from the press, as a medical beverage, known as the "Grape Cure." It was inaugurated here in New York last season with marked success. Grapes and fresh juice have been kept in cold storage during winter and the juice is still being sold regularly over the counter and will be until the new grapes come in. This is worth the careful study of your Commission. The other is the idea of condensing the must to be shipped to distant points to be used to combine with grapes grown in other localities, or to be converted (by adding water) into must for making wine according to requirements. Considering that nearly all our native grapes are lacking in sugar and too high in acid, it would seem that this last use would have special significance to Californians. But the chief thing that I wished to call the attention of your Commission to in this letter is the proposed *organization of a National Grape and Wine Growers Association.* This had its origin as you already know, in the effort to secure unity of action among grape growers in all sections of the country on passing the bill mentioned in the forepart of this letter, through Congress. While it is doubtless true that this bill, when enacted into law, will be of incalculable benefit to our viticulturists as well as to public health and morals, yet it will fail of its full force and purpose if not backed up by strong public sentiment, and especially by those who are the chief beneficiaries. We can hardly give proper expression to our affirmative support of its intents and operation as individuals or as a mob. What the situation demands is an organized, aggressive body of resolute men bent on carrying to its full fruition the statute in all its parts, and intent on securing the fullest benefit possible to be derived from its enforcement. Placing the law on the statute book is one thing; it will do us no good unless it is enforced; to enforce it the hands of the Government must be sustained by a vigorous public sentiment. To create this sentiment is our task; it will not come forth of its own volition; it is never self-made; it can only be brought into play by organized action of a considerable number of individuals having a common purpose and acting in unison. Public sentiment is an intellectual force depending for its existence upon numbers, and the strong desire of many to attain results believed to be beneficial to human desires and necessities and the organization of moral and physical forces to secure such results.

Now this proposed National organization is precisely the moral and physical force that is needed to secure the passage of the proposed law, the enforcement of the law and the utmost benefits to be derived from such enforcement. It seems to us here, that every possible effort should be put forth by you in California, to promote the success of the Convention and Exposition in Washington, in May, and the permanent organization to follow as a consequence. To our perception here, this action seems a necessary corrollary of the passage of the law. The law is the ship we have built and launched, on it we have staked our fortune and future success, a permanent National organization is the crew we should put on board to sail it. We sincerely hope we shall find you Californians on deck when we step on board.

Great interest is being manifested in all the wine growing centers of the East, and local meetings are being called, and arrangements made to secure a full attendance and a full representation of our wines, etc., at the Exposition. You may rely upon it, the Eastern States will be there in full force, and we trust California will not be found lagging. With respect to the work to be done at this convention, we should like to hear the views of your Commission. Competent persons must be selected to address the convention on various pertinent subjects, and we should like to be advised by you, as to whom we may depend upon in California for addresses, and upon what particular subjects they would like to speak. We desire also to be informed as to the number of exhibitors we may expect, and

the amount of space they would be likely to occupy.

We would suggest that every product of the grape should be recognized as admissible as proper exhibits, also all tools and implements, etc., used in grape culture and in the conversion of grapes into food products.

There is one very important question that should be brought before the convention namely, the question of prohibition legislation in the States. Several Eastern States have adopted prohibition laws, or the still more idiotic and mischievous one of local option. I believe this last is unconstitutional, and means should be employed to test it before the Supreme Court. This law has just been adopted in Virginia, Georgia and some other Southern States have the law in operation, and it has been found very detrimental to the interests of the grape-growers and wine making. The farmers of this country, should be taught what they have at stake in this matter, and aroused to action in defence of their interests, and the people in general warned of this dangerous invasion of their personal liberty.

We earnestly request your Commission to give these matters careful consideration, and thereupon take vigorous and energetic action. There is no time to lose.

I conclude by extending to you my hearty congratulations upon the conclusion of your labor here, and upon the now assured success of your undertaking in respect to securing the passage of the bill. To overcome the many difficulties, and to bring the Administration into complete sympathy with the effort, was no small task. Our people in California are to be congratulated above all, and I trust they will not soon forget the great service you have rendered them. It affords us sincere pleasure to have been able to render you the aid without which it is quite likely disappointment instead of success would have been your and our portion. With fraternal regard, I remain,

Sincerely yours,

B. F. Clayton,

Chairman of Committee.

New York, March 6th, 1886.

I will say that we held a meeting of our Commission the other day, and passed a resolution in advance of receiving this letter, especially in prohibiting counterfeiting, which is a dangerous thing to our interests and to the public, and as I have heretofore said, simply stimulates the sale of rot gut whisky and prevents trade in bulky packages such as wines. I am exceedingly gratified with the zeal with which the people in the East are taking hold of this matter. I thought I would bring this up this afternoon, as it will be a topic of discussion to-night and mainly at the meeting to-morrow. Our Commission has had enough to do, and I really feel worn out myself with hard work, and some of the vine-growers ought to come in and help us. There is a great deal of correspondence to be gone through, and letters to be written. There is hardly a man in California who has not some friend acquainted with the member of Congress from the State where he lived. The southern country is full of persons who have recently come there from eastern States, who know members of Congress in the States that they have so recently left and who can report to them what they think on this subject. The chief difficulty in Washington is to take a man from Minnesota and interest him in the affairs of California. He is interested about his own State, and it is as difficult to interest him in California legislation as it is to interest an Oregon man in sugar planting in Louisiana. Many men that we have to reach must be touched by correspondence. Somebody, however, has to be in Washington to watch the measures and check the underhanded work of the lobby.

There were several gentlemen here, Dr. Stillman and others whom we expected to speak. Before I leave the stand, however, I want to make a remark. A gentleman, Mr. D'Arcy has been here and desires to address the Convention on the subject of the development of yeast germs, but he is not a vine-grower, and his interests in this matter is not exactly from a public standpoint, but from a business standpoint. He does not propose to give you any information, but only tell you where you can get the yeast if you make proper arrangements. I told him it was not a proper subject to discuss, but I would refer the people to him who might want to discuss with him. He is engaged in making the yeast, and thinks he has a remedy against diseased germs. He is here, in the room, if anyone wishes to consult him.

The President.—Is there anyone wishes to make any remarks?

Mr. Wetmore.—If there are any questions to be asked about the fermentations conducted by the Commission, my brother, Clarence Wetmore is here, and has with him a record of experiments which I cannot pretend to remember, and if there is anything in connection with our work that anyone would like to know, as to temperature or methods by which we arrive at a certain result, he would be pleased to answer.

Dr. Stillman.—It occurred to me in the use of tannin as to whether you could use it successfully in the making of white wine.

Mr. Wetmore.—Any kind. It applies to bran, flour or anything else that we have tried it in the form of making yeast.

Dr. Stillman.—Does not the excess of tannin impair the quality of white wine?

Mr. Wetmore.—The excess of tannin would if it remained there but it does not remain as a rule in white wine. I will go back as I do not think it was clearly understood last night, the explanation of what appears to be the cause why we lose so much tannin in our wine. When we examined it we found plenty there, and we first

put in enough just to soak into the wine. I think in some cases it is because there is an excess of albuminous matter, and especially with some must. During the process of fermentation and clearing, after the natural tannin is taken out just as it would in fining wines is probably where we use the color; probably clarifying could not take place without the loss of some color. We practiced on wine that was just fermented, and was turbid and thick as new wines are before they clear; we practiced with as high as a quarter of a pound of this commercial tannin so-called in mistake, to 100 gallons, and we found that when the wine cleared you would not have any apparent trace of tannin. The tannin has no disagreeable effect. On clear wine that is racked, and bright and clear, which you want to guard against any possible trouble of future fermentation, I suppose half an ounce would be enough. The excess of tannin is not feared anywhere, it is easily got rid of by clarifying or fining. If you had a wine with an excess of tannin in it you would have no trouble in disposing of it, for the merchant has another one ready to mix with it that is lacking in tannin. An excess of tannin is not in the commercial world looked upon as an obstacle in the sale of the wine. But if you use this oak tannin I would not do it with the idea of leaving it in the wine. Wine-growers will have to make experiments as to how to conduct this practice. We have some white wine at the office, which you can see, it was some that Mr. Crabb sent, and we tried to see what we could do with it. The commercial tannin is made of nut-gall. Nut-galls not extracted are not proper to use—they are not strong although they can be used. What we ought to do is to get only pure wine tannin. I do not know how we are going to get it there unless we import it for a time. Perhaps we might get it from the tannic mixture. I have a suspicion that the cleaning of the casks with some such liquid has something to do with the quality of the Bordeaux wine. Such wines as have not got a sufficient quantity of natural tannin should be so treated. The lees of young wine would not have tannin in them, and it is only from some grapes that we get an excess of tannin. It is my belief that in France they must get it from the lees because they sell it cheap enough, so cheap that I do not see how they could manufacture it from the seeds or skins. It is sold at about a dollar a pound in powder form, and when it gets here it is about $2,50. It is not much more than the ordinary tannin and it is a much finer article.

Querist.—I have been using gum caoutchouc for I saw it answered the same purpose and while I paid for gum-caoutchouc, which is the same form of tannin at the wholesale druggists here, at a dollar a pound, the price of tannin not gum-caoutchouc, but what they call tannin and is five dollars a pound.

Mr. Wetmore.—We bought it last Fall at $1.65. It is tannic acid extracted from nut-gall. You can get this imported, paying all the taxes. duty, etc., at about $2.50, and I believe it is a better article. It is easy to experiment with small packages, until you find how to properly use it.

Querist.—Are not all of them, the gum-caout-chouc and the nut-gall, the product of the oak ?

Mr. Wetmore.—Somebody else might tell about the gum-caoutchouc. The nut-gall is the one ordinarily used and that is the one we tried.

The Convention was then adjourned until the evening at 8 o'clock.

EVENING SESSION,

The President.—Ladies and Gentlemen: This evening will be devoted to a discussion of legislation, and we will have read the bill that has been presented to Congress after we get through some preliminary business. Then we will hear a discussion and suggestions of amendments. We have, however, first some committees to report, and I will call upon the raisin committee of which Mr. Jackson is the Chairman.

REPORT OF RAISIN COMMITTEE.

Mr. Jackson.—I have to regret that I was unable to meet the other members of the committee, and in fact I have been unable to meet any raisin men here except Mr. Coleman and the representatives of Lusk & Co., and I think they are the parties who presented nearly all the samples. As far as I personally am concerned, I know very little about raisins or the making of raisins practically. As I said the other evening, I happen to be interested in a raisin farm, and was of necessity compelled to investigate the business a little, and that is the reason I have manifested some little interest in the proceedings. At the request of your President, I present this report, which is signed by no one but me, as I have met no other person. The remarks therein are not intended for your instruction, for I am not competent to give instruction. I, however, will make the matter short and present my report.

The Honorable Board of State Viticultural Commissioners, San Francisco, Cal:—GENTLEMEN:—Your Committee appointed to report on California raisins, methods of planting, cultivating and irrigating, methods of curing—sun-drying, and in evaporators, also methods of packing and grading for market, have been unable to meet and make a formal report as a Committee, but agreeable to your request, I will venture a few statements on the above subjects, as I see and understand them from the exhibits presented to the convention and a very limited personal experience.

1st. Planting.—The practice in California, is to plant in rows each way, varying from 7 to 8 and 10 feet apart, and in some cases as much as 12 feet. A part of the noted Briggs vineyard in Yolo County, is planted 12 feet apart, and the prevailing opinion in the northern part of the state, is, that they should never be planted closer than seven or eight feet. The late Mr. G. G. Briggs, believed that the quality of the grape would be improved by the wide distance between the vines, but, from observation, I am of the opinion that the contrary is the result, because the vine is then inclined to grow too much wood, and bears too much second crop. A closer planting would tend to confine the bearing to the first crop, of a more uniform size, and they would ripen early and more evenly, and have a greater percentage of saccharine, which is the essential quality in a grape to make a good, fine-flavored raisin.

I am not qualfied to give any definite instructions in regard to pruning. The usual practice is to prune the Muscatel low—down to the ground. The Sultana is pruned long, and tied to a 4 foot stake.

Irrigation.—The majority of the raisin districts have some means of irrigating. In the northern counties—Yolo in particular, they flood the ground once a year just before or about the time the vines leave out. In wet seasons, some do not irrigate—it is not a necessity any season. Summer irrigation is very little practiced. Those who do it, believe that it both increases the quantity and improves the quality, but this question is much discussed both pro and con. However, in many localities in the southern districts, irrigation is not a question of quantity or quality, or flavor of the raisin, but a matter of life or death to the vine—without irrigation, the vine could not be grown at all.

As to the merits of irrigation and non-irrigation, I am of the opinion that if the moisture requisite to produce a healthy growth of the vine is lacking, judicious irrigation will be found profitable. A healthy and natural growth of the vine, and a natural ripening is absolutely necessary to make a good raisin, and cannot be expected of a stunted vine.

While I do not pretend to give directions when and how to apply the water, I believe that in the majority of localities, it can be used to improve both quantity and quality. It cannot, however, be denied that irrigation has been practiced to excess in many localities, especially where it is done in the summer, and where the subsoil is a hard pan, and of such a nature as to fill up and raise the level of the surface water. In the latter case, it may be necessary to have a system of drainage in connection with the irrigating system, both being planned to work in unison.

On the Jackson Brothers vineyard in Yolo County, we flood in the month of March, if the rain-fall to that date is not above the average, and, in my judgment, to the improvement of both quantity and flavor of the raisin. The effect seems to be identical with winter rain. Our drainage is sufficient, so there is little or no danger of an excess of water, even if practiced every year—wet or dry, it would serve to insure a sufficient supply of moisture at a season of the year when there is plenty of water in the creek for every one.

In answer to a question by President Haraszthy, whether it is more desirable to aim at quantity or fine flavor, permit me to say, plainly, that first of all the beginner in planting, aims at a profit and to secure it, he must have a reasonable quantity, and to secure this, it does not follow that he must sacrifice the fine flavor in the least. In fact, on the question of what is the finest flavor in a raisin, there is as great a difference of opinion as there is on the subject of irrigation. One can be convinced of this, by listening to the various expressions of like and dislike of the testers of raisins, at the different exhibits of this convention. I myself, note a greater difference in their flavor than in their size or appearance.

Question.—What is the cause of this difference of flavor? Is it locality, climate, soil, irrigation or non-irrigation? Or is it the pruning, or the distance between vines, or degree of ripeness when picked, and the time and conditions under which they are cured, *or is it the locality in which the taster is most interested?*

I admit my lack of knowledge on the subject. The only point I feel safe in expressing an opinion on, is that they should be ripe when picked, and the curing commenced at once, under favorable circumstances, and continue until cured and taken up as soon as they are completely cured.

I think that all will agree with me that the desire for a profit is very prominent, and to secure it, we must make a good raisin at a reasonable cost, and place it on the retail market at a reasonable price. In my efforts to secure information as to methods and experiences of raisin making, I have been a little surprised at the reticence of the growers, to exchange views or to give their experience and explain their methods. Some seem to think there is a mystery connected with it, and that they will lose something to give it away. They do not realize that their cigar will smoke as well after giving their neighbor a light as before, and that the pleasure and profit derived from the smoking is doubled.

Sun-dried raisins versus evaporated raisins.—No one, I think will claim that an evaporated raisin is equal to the sun-dried when the conditions are favorable for drying in the sun, yet a dryer seems to be one of the necessities to insure a profit, as much as a reasonable quantity, and, if properly managed, need not injure or even change the flavor much. There are a number of

raisin dryers in the State that will finish the process of curing which has been well commenced in the sun, and the product cannot be detected from the sun-dried, unless the taster is an expert, and even where it can be detected, the flavor may be in favor of the raisin finished in the dryer.

I have had only one season's experience with the dryer, and therefore will not attempt to give any information on it.

I will not, either, attempt to make any report on the merits of the different exhibits of raisins at this convention, except to say they are all taken from the stock of raisins consigned to the commission houses in this city, and are not the finest that could be procured if selected at the vineyards where raised. And while there is a very noticeable difference in flavor, I do not attribute this so much to locality, as to methods of cultivation and pruning and curing—especially the latter, and I firmly believe that with time and experience, California will produce as fine-flavored raisins as any country without exception, and it is being generally admitted even now, that many compare favorably with the imported article.

Packing, grading and marketing —I refer you to the remarks of Mr. Bramhall, of Wm. T. Coleman & Co., and Mr. Jacobs, of Lusk & Co., commission merchants of this city.

[Signed.] Byron Jackson.
Chairman of Committee.

Dr. Stewart.—What dryer do you use ?

Mr. Jackson.—I made a dryer somewhat from my own ideas. I did not consult anyone, but its general principles are more like the Schmolz Dryer; that is, we put our dryers on cars and handle them very similar to that pattern, but my mode of managing the engine and heater and blower, and the location of them is considerably different. I might say that, that I have talked considerably with Dr. Blatchley, who is a member of the committee with me, and I am very sorry I have not met him this evening, but before I made my dryer, I went to him and got all the points I could, and also got his terms for making one. I was at Miss Austin's place and saw hers in the summer time when it was not in use and took in as much of the mechanical points as I could. When I was there, I expressed to her, and also to Dr. Blatchley after I had seen their raisins and they were satisfactory that I objected to the great cost of the machine, besides some of the points in construction, but the cost I principally objected to. I made mine out of good lumber and lined it or covered it with tin and soldered it and did away with some gates and other things that I considered unnecessary. When I looked at it from a mechanical standpoint, I doubted whether the guides for the air had any effect at all. The idea was, that the wind would first pass through the dryer over these deflectors. The heat would naturally rise when the deflectors would turn it down. Those are about the only points that I disagree with, excepting one other where he puts the blower or fan as he calls it at one end of the dryer and his engine at the other end and the air only passed once through the dryer, which I considered a waste. So in constructing my dryer, I so constructed the boilers as to make it a sort of heating furnace, and the heat with heating drums from the smoke stack driving the air up into he heating room, and I take the air from there by a large fan and pass it through the cars, having two rows of cars and two parallel chambers. I pass the heated air down one side and back over the other and re-heat it over the heating furnace, so that it is constantly kept passing around instead of blowing it out by the use of the blower. As to the ventilation, I don't use more than sufficient as a mixer of the heat, allowing the moisture to rise by its own natural tendency. You cannot prevent it, and as you try to prevent it by the use of the fan, I think you have a great waste of heat. It proved so in my case, but we don't succeed in drying so quickly; that is, in five or six days. We were a couple of weeks in drying my raisins, and I think it makes a much better raisin to complete it in that way. Then in the use of our dryer we do not intend to make a raisin from the vine. We dry them as long as we can, and utilize the sun, for it is cheaper than any artificial heat. But we can use it when the rains come. We have a dryer large enough for that. You can have it in a room and it will draw and take care of itself.

Dr. Stewart.—These dryers seem to me a very high price, and they bar a poor man from buying them. Were you able to make your dryer within a reasonable limit?

Mr. Jackson.—Yes; the cost of my dryer is in the neighborhood of $3,000 including the engine, heating apparatus, cars, trays and building.

Dr. Stewart.—What is the capacity?

Mr. Jackson.—I have to explain that for I have changed my ideas. I made these cars with 2,000 trays, or 25 tons of green fruit, and the trays were placed five inches apart. I soon found we were not getting along fast enough, and I took my trays and placed them one above another with a little cleat between them, so that there were really two trays. I had power enough in the ventilator to carry the air through. I found when the rains came that I had not as much capacity as I wanted. After they were all dried, and I got caught in the rain, I piled them above the car until they were to the very roof, so that before I got done, I had 10,000 trays in the building of grapes that were commenced in the sun.

Dr. Stewart.—About what are the dimensions of your building ?

Mr. Jackson.—The first length, that is, the part of the building containing the raisins is 50 feet and the part containing the heater is 12 feet, making 62 feet. 10,000

trays make about 37,000 tons of raisins or did so when they were taken out. I have demonstrated to a certainty that a building for the dryer is not absolutely necessary, and is simply to have room that you can pile all these trays in. I kept the temperature from 105 to 115—about 110 is what we kept. When I changed the method of putting them on top of the car I simply opened the cars at the end so that when I blew the air under the cars it came over, so that instead of making the circuit around it went over the top, and the temperature was not more than 5 or 6 degrees different anywhere in the building. The grapes all finished in about 10 days, perfectly satisfactory, and the expense was reduced almost three times in that arrangement for it cost very little more to keep the whole lot of grapes hot than a smaller quantity. Anticipating as I did a saving, I was surprised at the result myself. The theory on which that was constructed is, that if we could produce the circulation of heat and distribute it around, letting the air go to a larger part of the room, still the moisture would rise of its own tendency. It requires no long channels or deflecting boards to make a good raisin dryer, consequently it is only a building constructed so as to handle the trays economically with some way of distributing the heat, which I did with cheap fans. I made a fan seven feet in diameter out of canvass.

Query.—Did you move the cars at any time during the drying ?

Mr. Jackson.—It does not require any change, they dry just as well at the further end. The only object in making these cars is that you can get at any portion of the trays and see how the work is going on and take them out when it is convenient. The channel goes down the center of the barn —it was not a well constructed building, and the cars would draw out into a sort of shed where we could load and unload them and turn the trays ; it was a low building, about 8 or 9 feet, just large enough for us to get under well. My idea was to have it so that we could just put them up above a man's head conveniently.

Query.—You say when you wanted to put in more trays you piled them on top. Do you mean the top of the car ?

Mr.Jackson.—No ; this chamber that contained the cars. They were shut in by sliding doors similar to the Schmolz apparatus, then there was a floor above part, and I sustained the floor so that it would carry five or six thousand trays more. At convenient distances, I allowed space for a man to pass through.

Query.—Does that answer in place of the sweat box ?

Mr. Jackson.—It is not designed to take the place of the sweat box at all nor is it for the same purpose. The raisins want to be taken out of there and put in the sweat box the same as if dried in the sun. But there is this point in the method, if it might be so called, that I use, of allowing the heat to arise of its own accord. We do not make it so dry as in some other dryers. One of the objections I had to the Schmolz plan was, that the heater was at one end and the fans at the other, In my plan we secured the heat more evenly, and there was not more than 5 degrees difference in any part of the building. It did not dry quite so quickly, but made a better raisin than if you hurried, and then you are able to avoid, to a large extent, the making of cooked raisins. I have seen one sample here that the tasters say is an over dry raisin. We had none of those in our dryer.

The President.—You have heard the report of the Chairman of the Raisin Committee. What will you do with it ?

[A motion was made and seconded that it be received and placed on file which, being put to a vote, was carried.]

The President.—To-morrow the meeting will be taken up by the State Vinicultural Society, which I hope will bring some help to the work of the Commission. We have now to hear from Mr. Pohndorff, the Chairman of the Committee on Wines.

Mr. F. Pohndorff.—There is not much that I can report to-night, There are about 420 samples of wines and brandies, fifty of them brandies. We have nearly sampled the whole of them, leaving about twelve or fifteen wines and perhaps twenty different brandies to be sampled to-morrow. A Committee was appointed of sixteen gentlemen, representatives from the different counties, which are represented by samples, and a special committee of three has been selecting those samples, which are of a superior quality and good ordinary, and, in fact, perfect wines. About one-third of the wine had that latter character, and are very good. Of the brandies, a good many have to-day been tasted, which are really instructive. A full report will not be given, except as regards statistics. That is to say, so many samples of each variety of wine consisting of so many samples from each county which are considered superior, or second degree, or good, in quality. Each of the members of the committee will report in his district particulars of all these samples. That is about all that can now be said. To-morrow, the sampling will be finished. When we have concluded our labors the report will be presented in writing.

The President.—We will now call for the bill to be read that has been introduced in Congress, and invite your discussion on the points as they may present themselves to your mind, Mr. Wetmore will now read the bill.

Mr. Wetmore.—In the matter of the legislation in which our commission has been interested, together with wine-growers elsewhere, we really cover more than the subject matter of this particular bill which is called our bill. We have the matter of

spurious wines to contend against; we desire free use of brandies in fortified wines; we desire the privilege of breaking up brandies in bond into any shape or sized packages required by the trade, and filling where they are emptied, and we desire to have the principle recognized that the government should tax nothing, but consumption and not production, hence, as a principle, we claim that unlimited bondage should be the rule, as recommended by the Commissioner of Internal Revenue. As long as a man does not desire to sell his goods, it is altogether a piece of tyranny on the part of the Govornment to tax them, but we may have to compromise on that, and if so, we desire an extemsion of the bonded period to, at least, eight years. Some of our Eastern friends, as well as our own here, think that the sales of our wine should be free from taxation. That is, that there should be no special tax. The freedom from that tax is something to be asked for, although it will be a difficult thing to get from the fact that they have not any tax that will take its place. We have also to take into consideration the various forms of legislation outside of Congress that are being urged by the prohibitionists which have a direct influence on our welfare and the welfare of the people. But our attention, at the present time, has been given above all things to the question of spurious wines, as it is a growing evil, and unless we can relieve ourselves from this vilainous competition, we will have our wines in discredit, and ourselves under suspicion that even pure wines are impure.

The preparation of this bill, which I will read to you, has been a very difficult matter. It was consulted over here by members of our Commission and other vine-growers for more than a year, and when I went East recently, all that I was prepared with was the rough draft and substance of what we wanted included in the bill, realizing that it would be impossible to accomplish anything unless we had the good will of the Eastern wine-growers, who had vastly more political influence in Congress than we had. We realized also that it would be impossible to pass a bill of that nature unless we had the good will of the Legislature also. Our effort has been to obtain all these various forms of support, and especially from the merchants, importers and others, who are dealing in pure wines, whose interests in this matter are identical with ours. On visiting the East, and after consultation with wine-growers in New York and elsewhere, a meeting was held, an Eastern society organized, out of which has grown a national society with members in all parts of the country. The work that has been done by this society has been reported upon this afternoon in the letter that I read, and which I will read again for the benefit of those who might not have heard it. Societies are springing up all over the United States, which are willing to work with us, and are realy more in earnest than we are; not that they are more interested, but they seem to take hold of ideas of this kind with more vim and zest. In order to impress their influence on the country and Congress it has been arranged that a convention will be held in Washington in May of wine-growers of the United States, where there will be an exhibition of our products from all parts of the United States. The States will be out in force and it is expected that California will take a leading position. The National Society has requested our Commission to co-operate with them in the matter. I am in hopes that the letter which I read to-day will be published in some of the newspapers at an early date so that some of our wine-growers here will see what interest the Eastern men are taking in this matter. When I met the importers, I found that when the facts were put properly before them, giving them a just representation of our interests that there was no diversity of opinion, there was no cause of difference between ourselves, and the importers accept the tariff, and of course that is an irreconcilable conflict. The Governor gave me a letter to the President, which, when I presented, was referred to the Committee on Internal Revenue and Agriculture, both of which committees showed an earnest spirit in looking into our affairs. It required a good deal of effort, however, to convince them that a bill could be drawn in such a way as to be enforced, for the difficulty is this, that there is a dividing line running through it, distinguishing between pure wines and suspected or imitation wines. To make provision so that the Department in exercising the law as to what should be taxed and what should not be taxed, and to provide against frauds, and to provide proper penalties has been a difficult task, and took a great many days work. It was first introduced informally before the Committee on Ways and Means, and before the Commissioner without introduction into Congress for the purpose of having it discussed and ascertaining what their views were on the subject, and finally a bill was drawn satisfactory to the Commission. Nearly all the provisions relating to the mere execution of it, and the working departments were drawn in the Commissioner's office, and as it stands to-day, it is really the bill of the administration, the substance being provided by the wine-growers. It is warmly indorsed by the Commissioner of Internal Revenue, who does not pretend that a large amount of revenue will be derived from it, but it will do a great deal of good. The Commissioner on Agriculture is equally earnest in the matter. It was introduced after I left. It could not be introduced until the Monday following. It is in charge of Col. Green of North Carolina, who has a large vineyard there, and

he can be trusted to see that the bill is not tortured out of shape, by any unwise compromise of its provisions. We are satisfied that our own delegation will support it. Apparently the Sub Committee of Ways and Means are favoring it as far as we could learn. It is a novelty in the way of legislation, the first of its kind, and of course the members are cautious not to express themselves enthusiastically, but as far as I could learn the sentiment is all in our favor, and nothing but a stupid blunder or neglect will allow it to be defeated.

The bill has not been published except in the form which you see it here, and what I proposed to-night was to read it and show the character of the bill and the absolute importance of having its provisions properly executed. If there is any imported wine that does not come under the provisions of this bill, the Internal Revenue as well as the Customs service will be taxed to bring them under control. Everything that is known as drinkable, or containing the product of fruit juice is taxable, except the must of wines in Eastern States. They require the addition of sugar and sometimes glucose. In order to harmonize the interests of this Coast and the Eastern States, we have got Eastern wine growers to agree on limiting the use to the sugar of the cane, cutting off glucose altogether. The use of sugar in the East will soon, however, no doubt, be substituted by our own condensed must. They need sugar, and we can supply it to them, in the form of condensed grape juice. At present, however, it is required, and so to secure their co-operation, we have admitted the use of cane sugar, which is not a very serious thing, and only for the perfecting of the wines, and not for "stretching" them.

The Internal Revenue clause is so applied, that wherever you see the goods you can identify them and know whether they are taxable or not.

The theory of the section of compound liquors is the jist of the whole bill. By it the consumers are given information as to what they are drinking. If they want to drink compound liquors, then they can do so, and know it. That section, while it is the strength of the bill, is also its weakness, for the Internal Revenue Commissioners say that when articles are required to be marked, and such stamps put upon them as will show their contents, it is practically prohibition—which is a thing we are trying to gain. Our argument is, that if such a law prevents the sale of goods by reason of the fact that the consumers know what they are buying, then our statements that they ought not to be sold is maintained. But from the Internal Revenue standpoint, the Commissioner must necessarily report that he cannot get any revenue out of such a bill, for, by enforcing it, the Government is not going to make money out of it. That, of course, is one of our difficulties. The stamps have to be made for attaching to these curious goods, but they don't expect to get any revenue out of it. That is where the novelty of the bill comes in, for it is using the Internal Revenue Department for something other than the getting of Revenue. Under this act we are of course supposed to affect everything, excepting those goods that are excepted, but there are several kinds of adulterated, fictitious, falsified, imitation wines and compound wines. There may be a class that may not be allowed to pass current—while not condemnable, yet are still not absolutely bad. For instance, a compound of glucose and corn spirits and a little tartaric acid might be claimed by some persons to be wholesome drink, and if they wanted, they ought to have it. Is will not do them any harm. But there it another class of compound adulterations that are known to be deleterious to the public health. So the law goes on to apply to them for the purpose of absolute suppression.

The theories of the penalties consists in this, the law for which this is substituted provides only a tax. The Collector of Internal Revenue is required to find the goods that are taxable. He accosts a man and assumes that his wine is taxable. A man writes up an affidavit and says it is pure wine. What is he to do about it, he does not know. If he does discover that some wine is going out that is taxable, he can seize the goods. But how many men care for this who are engaged in this nefarious practice? They would take the risk of an occasional fine or an occasional tax, for they make a lot of money out of the stuff that they do cheat the Government on. But making a violation of these laws punishable, and not only by fine but by imprisonment, is what we rely on to see its provisions respected. A man is not going to put salicylic acid in wine or analine dyes, if by doing so he is subject to imprisonment. The bill reads as follows:

In the House of Representatives, March 8, 1886, read twice, referred to the Committee on Ways and Means, and ordered to be printed. Mr. Wharton J. Green introduced the following bill:

A BILL DEFINING PURE WINES AND PROVIDING FOR TAXATION OF CERTAIN COMPOUNDED BEVERAGES.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That on all liquors containing alcohol, produced by fermentation or by being compounded with distilled spirits, or by both methods, whether denominated as wines, imitations of wine, or by any other name whatsoever, in the nature of articles for use as beverages, or for compounding with other liquors intended for such use, and on all compounds of the same with pure wines,

and on all preserved fruit-juices compounded with substances not produced from fruits in the character of or intended for use as beverages, or for use in the fermentation or preparation of liquors intended for use as beverages, and on all wines, or imitations of wine, or liquors to be sold as substitutes for wine, which are made in whole or in part from dried grapes or other dried fruits not grown in the United States, or from imported foreign fruit-juices which are admitted into the United States at a less rate of duty than still wines, there shall be levied and collected a tax of forty cents on each wine gallon, and for each fraction thereof at the same rate per gallon, to be paid by the manufacturer, compounder, importer, or owner, or person having possession thereof before removal from the custody of the proper Custom House officers. The tax levied by this act shall be represented by coupon stamps when the taxable article is contained in packages holding five or more wine gallons, and by strip stamps suitable to be affixed to bottles when such article is contained in packages holding less than five wine gallons; and the provisions of existing law governing the engraving, issue, use, accountability, effacement, and destruction of stamps relating to distilled spirits, as far as applicable, are hereby made to apply to stamps provided for by this act: *Provided*, That any fraction of a pint in excess of the whole number of pints in a cask or package shall be taxed as a pint: *Provided further*, That the taxable quantity in each package shall be determined by an internal-revenue gauger; and all existing laws governing the employment of gaugers in the gauging of distilled sprits, as far as applicable, are hereby made to apply to their employment under the provisions of this act: *Provided further*, That these provisions shall not apply to malt liquors; nor to distilled spirits, cordials, bitters, and medicines which are popularly as well as commercially known and intended for sale to consumers as such, under names or brands which shall not cause them to be recognized as wines, and which are not used as substitutes for or for compounding with wines, or imitations thereof; nor to pure wines, as hereinafter defined: *And provided further*, That the tax so levied and collected shall not release the tax otherwise levied by law on any distilled spirits used in the preparation of such liquors: *And provided further*, That the tax herein provided for shall be in addition to any customs duty levied on such liquors when imported from foreign countries.

SECTION 2. That all packages, of whatever size or kind, held by any producer, wholesale dealer or retailer, containing pure wines as defined herein, whether foreign or domestic, intended to be offered for sale, whether they are denominated as wine, cider, or by any other name, and which are exempted from taxation, shall be plainly stamped, branded, or labeled, in accordance with regulations which shall be prescribed by the Commissioner of Internal Revenue, with words indicating that they are pure according to the standard of the United States; and such brands, labels, or marks shall be considered prima facie evidence that such goods are exempt from the tax provided for herein: *Provided, however*, That the collectors of internal revenue, under regulations to be prescribed by the Commissioner of Internal Revenue, shall exercise due vigilance in detecting fraudulent representations, and shall have the right to inquire whether such brands, labels, or marks correctly indicate the contents of the package to which they are affixed: *And provided further*, That such collectors shall be required to inform themselves as to methods of practice in producing any and all liquors affected by this act, and shall have the right to demand explicit information as to such methods from any or all producers, and as to the origin of the same when in the possession of dealers, and shall report on the same upon the demand of the Commissioner of Internal Revenue. All packages bearing brands, labels, or marks indicating that their contents are exempt from taxation under this act, but which contents are subject to such taxation, shall be forfeited to the United States; and any person who shall brand, label, or mark as free of tax under this act a package liable to tax thereunder shall be guilty of a misdemeanor, and be punished by a fine of not less than one hundred dollars nor more than two thousand dollars, and by imprisonment not less than thirty days and not more than six months, for each offense; and any packages of liquors containing alcohol, other than malt liquors, distilled spirits, cordials, bitters, and medicines, as defined herein, which are not stamped, branded, or labeled in accordance with the provisions of this section, shall be deemed to be taxable and shall be taxed under the provisions of section one of this act. Pure wines, which shall not be subject to tax, shall be known and recognized as the juice of grapes, apples, or other fruits fermented, prepared, preserved, or fortified as beverages, according to methods recognized by competent authority as legitimate and approved by the Commissioner of Internal Revenue; without the use of materials intended as substitutes for fruit or any part of fruit; free from the addition of any coloring matters which are not legitimately produced from fruits, and not compounded with any coloring fruit-juices of foreign production which are admitted at a rate of duty less than that imposed on foreign still wines; and containing no salicylic acid or other antiseptics, or aniline dyes, or other adulterations recognized as deleterious to the health of consumers: *Provided*, That the practice of using cane-

sugar to perfect wines, and for no other purpose, shall not be considered illegitimate.

SECTION 3. That all packages of liquors taxed under these provisions shall bear stamps indicating briefly the nature of their manufacture, and the name and place of the manufacturer, compounder, or importer, so affixed as to be plainly seen by any purchaser; and in case the holders of such liquors shall desire to empty any package so stamped, all new packages, of whatever size or character, shall have similar stamps likewise plainly affixed; and the Commissioner of Internal Revenue shall make all regulations necessary to provide for such change of stamps and for the proper identification of such goods to all holders or purchasers thereof. All packages containing such taxed liquors shall, under regulations of the Commissioner of Internal Revenue, who is hereby authorized to prescribe the size of the letters, be legibly and prominently labeled, stamped, or branded also with the word "compounded;" and for the purposes of this act such liquors shall be known as compounded liquors.

SECTION 4. That compounders shall pay a special tax of one hundred dollars. Every person who manufactures, compounds, or imports articles subject to tax under this act shall be deemed a compounder. Wholesale dealers in compound liquors shall pay a special tax of one hundred dollars. Every person who sells or offers for sale articles subject to tax under this act, in quantities of not less than five wine gallons at the same time, shall be regarded as a wholesale dealer in compounded liquors. But no compounder, as defined by this act, who has paid the special tax as such, and who sells only articles subject to tax under this act at the place of manufacture or importation, in the original packages on which the tax stamps are affixed, shall be required to pay the special tax of a wholesale dealer in compounded liquors on account of such sales. Retail dealers in compounded liquors shall pay a special tax of twenty dollars. Every person who sells, or offers for sale, articles subject to tax under the provisions of this act, in less quantities than five wine gallons at the same time, shall be regarded as a retail dealer in compounded liquors. And the provisions of chapter three, title thirty-five, Revised Statutes of the United States, concerning the special taxes, as far as applicable, are hereby made applicable to the special taxes created by this act.

SECTION 5. That every wholesale dealer or compounder who offers for sale compounded liquors which are subject to tax under the provisions of this act shall be required to keep such books as will plainly show what quantities of such liquors have been made, prepared, or sold by him, together with the date of such manufacture, purchase, or sale, and the name of the person from whom purchased or to whom sold; and such books shall at all times be open to inspection by any officer of the internal revenue.

SECTION 6. That there shall be in the office of the Commissioner of Internal Revenue an analytical chemist, who shall be appointed by the Secretary of the Treasury, and shall receive a salary of three thousand dollars per annum; and the Commissioner of Internal Revenue may, whenever in his judgment the necessities of the service so require, employ chemists, to be paid such compensation as he may deem proper, not exceeding in the aggregate any appropriation made for that purpose; and the Commissioner is authorized to decide, for purposes of taxation, what substances enter into the composition of liquors which may be submitted for his inspection in contested cases; and his decision in matters of taxation under this act shall be final. The Commissioner may also decide whether any liquor containing alcohol and intended for human consumption contains adulterations deleterious to the public health; but in case of doubt or contest his decisions in this class of cases moy be appealed from to a board hereby constituted for the purpose, and composed of the Surgeon-General of the Army, the Surgeon-General of the Navy, and the Commissioner of Agriculture; and the decisions of this board shall be final in the premises.

SECTION 7. That all packages of liquors subject to tax under this act shall be found without stamps and marks as herein provided, and all liquors intended for use as beverages which contain adulterations known to be deleterious to the public health, shall be forfeited to the United States. Any person knowingly violating the provisions hereof, or who shall willfully remove or deface the stamps or marks on packages containing liquors taxed as provided herein, shall be guilty of a misdemeanor, and shall be punished by a fine of not less than one hundred dollars nor more than two thousand dollars, and by imprisonment for not less than thirty days nor more than six months.

SECTION 8. That the Commissioner of Internal Revenue, with the approval of the Secretary of the Treasury, may make all needful regulations for carrying into effect the provisions of this act.

SECTION 9. That section thirty-three hundred and twenty-eight of the Revised Statutes is hereby repealed.

SECTION 10. That this act shall go into effect ninety days after its passage.

Mr. Wetmore.—The condition of the bill now is, that it has been practically heard by the Sub Committee on Ways and Means. It has already passed from the administration with the approval of it, and requires now only the report from the sub committee to the Committee, and from the Committee to the House to get on the calender. Support for it is being relied upon all over

the United States. Delay is not just what we want, but it is the nature of the Bill that it gains strength every day, and does not grow weaker. But we have got to educate hundreds of men in Congress to understand what it means. Bills of this kind are like Greek to the men of Minnesota or Ohio, who do not understand what it is about. The change of a little word in the bill might change the whole tenor.

A bill of this nature must necessarily be introduced into the house first, for it is a revenue bill on its face. It has orignated in the house, and has gone to the Committee on Ways and Means, and our hopes are that it will so on be reported. But it must be watched continually from the beginning to the end. Those who mean to oppose the bill, will not oppose it by giving their true reasons. There is no man going before that committee and saying he is dosing his wine with salicylic acid or analine dye. There is no man going to say so in so many words. If he attacks it, it will be by some flank movement. He will perhaps content himself by talking up the Internal Revenue laws, and insisting that it is not the duty of the Government to touch the matter, but it is the duty of the State. There are a dozen ways of opposing it. So far, however, I have been not a little surprised at the very little opposition that I have met with. This is perhaps due in some measure to our method of attack in the eastern organizations. At the time of leaving the east, I heard of but one opposition to the plan, and that came from a house in New York, deal- in California wines. The moral of that people can judge for themselves.

All the wine growers in the east are in favor of the bill. It is satisfactory on all grounds. The only trouble will be in fighting off the opposition that will be disguised, and it will require constant attention. There are a great many phrases in the bill, in which the change of one word would change the measure, and the majority of the members of Congress do not understand it sufficiently well, without being talked to on the subject and the matter explained to them. Consequently, the only safety we have is in arousing the wine growers through the United States, to write to their representatives in Congress, that the bill is all right and would and should meet with their support. We have therefore taken the precaution of having copies of the bill distributed everywhere. Before I left or the bill was introduced, 500 copies of it were sent to members of Congress and New York people and elsewhere, so that they could become familiar with its provisions in advance. We have taken that precaution to prevent being caught afterwards.

There is nothing now to do with this bill except to have it pass the committee. The effect of it, as stated by Mr. Clayton in his letter, is undoubtedly something that will be of immense benefit to all. In the first place, it increases our market to the extent that we displace all these compound liquors. In the next place, it increases our market as it increases confidence in our goods that are supplied. At the present time, there is a hue and cry about adulteration all over the east. So much so, that a majority of the people are afraid to buy anything, particularly drinkables. And you can not convince a man by simply putting on a label, that it is pure. Everybody does that, more especially those who make impure wines. I have a circular in my pocket of a New Jersey wine maker, who makes a pure Oporto wine from the Oporto grape, imported into New Jersey and grown there, while it is well known that there is not an imported vine that will grow in New Jersey. He is only one of a number of traders who are continually practicing in this way. It costs nothing to put a mark on the bottle, and is only regulated by the honesty of the man who puts it there.

In preparing the first draft of the bill, we were afraid that the department would hesitate at the stringency of our provisions. At first, it did shrink on seeing the amount of work that there would be to enforce such a law. I explained the matter however, thus: as there were vital interests between those making pure wines, and those making compounds, that it would soon become understood that those making pure wines, and who had an interest in protection, would give all possible information to Government Officers whenever there was a fraud. Consequently their work would be very much relieved. That would be the result, but at the present time if we found wines dosed with analine dyes or salicylic acid, what good would it do us? there is no law to prevent it; nothing at all. But if there is a law to prevent it, the danger of punishment will stop the work to a great extent, and this is the only safety that we have in the future. If we do not pass a law this time, or if I thought we could not, I should want to tear my vineyard up, for to remain in the business and be honest would be absolutely impossible, unless I was aiming at some high grade wine I should offer to the public in bottles, unless I had wealth and could advertise my own goods, and make them known through my own agency, and rely on my own protection. But if we are to send millions and millions of dollars of wine in casks all over the country, to be broken up and bottled here and there without any attention to the producer, unless there is some mark to follow them all the time to show that they are pure, they will meet in competition, this stuff that they make for about 17 cents per gallon in New York. And you will find that nearly all or a very large majority of the merchants, if we are not protected, will deal in both classes of goods. That is one of the difficulties in getting the merchant houses in the East to assist us. I brought that before the com-

mittee to explain this matter. Competition is the great incentive to wrong. One man sells goods cheaper than another, and the second man is forced to come down in his price or go out of the business. All these fictitious goods are made to under sell superior goods. They are made so as to be bought at a low price and put on the market in competition with higher priced goods. They are practically worthless. On our coast we could stand the strictest construction of the word "purity." That is what we tell them in New York. We said to them: "We will allow you to draw that bill in any way you please, provided you do not interfere with the ordinary practices recognized by competent authorities in the business. You can draw your line of purity as fine as you please, and it will not hurt us." The only question was, how we could combine with them, and whether they would be satisfied to have us give them only an exception as to cane sugar in fermenting; but so far as we have had anything to do with them, they have agreed. A gentleman of the Pleasant Valley Wine Co. was with me before the committee and indorsed our views. All it requires now, however, is an organized effort to get this bill through, and such contribution of funds or materials as are necessary to present our case before the country. At this Convention to be held in Washington in May we should have a good, large representation and a good large exhibit. We need to have the material necessary to attract attention to our work and to gain for it some attention.

Mr. Landsberger.—Including coin.

Mr. Wetmore.—The coin is necessary to pay the expenses. It cost me on the last trip some $500 more than I received. If we want anything done, we have to pay for it. It costs money, legitimately. While I was working in Washington I had to keep a cab from 9 o'clock in the morning to 12 o'clock at night running after me to carry me around, or I could not have got through with the work. All these things cost money. Of course, a part of the work is done, but it needs close attention, and arrangements should be made at the meeting of the State Vinicultural Society to-morrow to appoint a committee to assist in this work. The idea that any other means are required, for any purpose than to pay the expenses of the person at work would be foolish. But there will be hundreds and hundreds of letters yet to be written on the subject before we get through. Bills are not made in a day. We cannot tell, but we may get the information that this is a wrong kind of a bill, or that it is not the duty of the Government to undertake the work. We cannot tell where we are going to be attacked. We must be ready for work. So far we have the earnest support of the newspapers. All the newspapers in Washington are earnestly working for us. I have received two letters since my return, one from the editor of the *Sunday Herald*, who has promised us all the effort he can give us. When I first presented the subject to Mr. Willis he said the bill ought to pass under a suspension of the rules. That is easy to say; but that expresses his temperament. Other men have expressed themselves in like manner. I want to impress upon you, in relation to this subject, that if we do not succeed in this undertaking, we will have more trouble in handling our wines than any of you ever had. If we do succeed, we have the entire market of the United States cleaned out for pure wine, and no one is hurt. A man who has got a five-story brick winery, as it is called in New York, all he has to do is to turn it into a shoe factory or something of that kind, and it does not hurt anybody, but if we, who have vineyards and have taxed ourselves to the utmost, and have taken years of labor, are injured by these spurious wine makers we suffer, and suffer seriously. If there are any questions in regard to the bill, before we adjourn, I shall be pleased to answer them, in order that we may thoroughly understand it.

Mr. Combe.—It seems to me that the first thing we ought to do is to make up our minds and have a unanimous approval go forth from this Convention, to lead the movement all over the United States. I therefore move that this bill be approved and indorsed by this Convention.

Mr. E. B. Smith.—I second the motion.

[The motion being put to a vote, it was unanimously carried.]

Mr. Wetmore.—Before sitting down I want to refer to some further legislation, for this is really our hard working year. We have our spirits up and have to do some work to-morrow. The bill asking for the use of spirits made in our wineries from grapes, to be free of tax in fortifying wines, such as sweet wines, &c., is not so far along as this bill I have just read. It is still in the hands of the Commissioner of Internal Revenue, who has got a good deal of work yet to do with it, but I presume all of you understand what the bill refers to, and it does not require any explanation. But if there is any explanation required, it ought to come up to-night or to-morrow so you can think about it. To assist those who have not thought about it at all, I would suggest the various forms of fortification we require in wine for commercial purposes.

First—In making of sweet wines to check fermentation.

Second—The fortification of really so-called dry wines (Sherries) which are afterwards sweetened.

Third—The fortification in a small degree of some of our Clarets that are going into the warm countries, such as are universal in Bordeaux. I suppose, however, that when wine leaves that country for this or north rn countries, one per cent of spirit is added to it to keep it bright and clear. To these various uses of spirit the wine makers

are used. Such wines that we have been talking about recently, that do not ferment well and make good brandy carefully distilled.

We can use the waste material of the vineyard and build up an industry. The reason we want this bill is, that our wines have to come in competition with those of Mexico and other places that have been fortified without any export duty on the spirit, whereas we have to pay 90 cents on the spirits used. Consequently, if we do not get such relief, we cannot make pure wine here and send it to London to be in competition with wines made in France or Portugal. The law, as it stands, is simply a discrimination in favor of foreign products. Again, the imported wines are no taxed for the amount of spirits that is added to them. The same rate of taxation is added on still wine as wine that has been fortified; that is, in equity an admission on the part of the Government that these spirits should not be taxed. It is, however, useless for me to detail to the wine makers what these points are until we are ready to talk of them clearly because the outcome of any legislation would be probably something similar to this bill that we have read just now. A bill will probably finally be drawn if we get success at all. When the law satisfies the Commissioner, and he wants to be satisfied that no fraud can be committed under it, we shall make some progress. That is where the effort of the people lies now or should lie now to satisfy him as to the form of the bill. Before leaving Washington, he wrote me a letter asking me to report to him, if possible, under what circumstances fortifying is required and for what purpose. This letter will probably be the basis for some future legislation. But what I intended to remark was, that when the bill is framed and it is telegraphed across the country, the growers here should have clear ideas and how it affects them. The Commissioner wrote to me on March 3rd.

I have found, so far as I have done the work there, that there seems to be an earnest desire to do what is right, but considerable caution for fear of doing what is wrong. I have no reason to believe that we shall fail in any measure which we shsll undertake, provided we are patient and use ordinary intelligence in presenting our case, appealing to the public for public sympathy as far as we can. The bills relating to brandies, bonded etc. have not yet fully developed. Upon that bill will probably hang the whisky bill. A bill for the allowing of brandy to be broken up into any suitable size package has not yet been drawn. It was found thoroughly impracticable to raise so many issues at once. The first intimation I got from the Internal Revenue Commissioner when I spoke of this was not to ask too much at once. Not because they were not right, but they cannot think of all these at once. It takes time to devise a measure.

The question of prohibition we ought to think about, and I would like to raise it before you to-night, so that at the meeting tomorrow we may have some ideas in discussing it. Upon this subject, I may repeat some things that I said on Monday night. Prohibition doctrines are prevailing in many States, and in some places it is being accepted, not because there is any general public sympathy for it, but because there is no opposition, or if there is opposition, it comes from quarters that do not command public respect. The consumers, whose liberties are being interfered with, are doing nothing. If there is a faint opposition, it is left with the retailers. The producers are doing nothing, so that practically they are running their battles by apathy. Of course, we cannot expect Congress to do much, if we are quiet, we must interest every consumer, and make him know that he has an interest with the general public.

It will be a part of our duty in the future to make the public know that they have an interest in these things. I have taken great pains, so far as the opportunities have presented, to enquire how these prohibition laws worked in the several States. I found them without a single exception. In talking to gentlemen of high character whose words would certainly be received anywhere, that in one of these States the actual consumption of villainous spirits was greater than it was before they passed this prohibition law. The kind of excitement it gives a man who is hunting for something he cannot get lawfully, and the pride he takes in breaking the law he thinks encroaches on his liberty, encourages him in accomplishing his object. I recollect one Sunday afternoon in Washington going down to the Villard Hotel and passing into the saloon, and there I found three or four officers of the Government and two or three Senators taking a drink. That in a place where the prohibition law is supposed to be enforced. The public has no respect for laws that are in force, where the interests and dignity of personal liberty are violated. The immediate result is contempt for the law, contempt for the law makers and contempt for those who execute the law, and ultimately, more or less corruption of the petty officers who have the enforcement of the law in their hands. In Maine whiskey is used on every hand. Beer is a favorite drink and is freely passed out for, notwithstanding its bulk, it can be used up quickly. One gentleman described a scene where 8 barrels were thrown from a train. A Government officer was there trying to seize it, and he was in the ridiculous position of sitting astride of two barrels, while the others were being carried away. So far as the character of the spirits is concerned, it is as villainous as it could be, and the consumer has no right to complain, because it

is against the law. They are sold under circumstances which prevent an inspection of the character of the compouud. The statement I received from a prominent man was, that the chief business of the Express Companies consisted in carrying packages of spirits all over the country. This gentleman's own house was supplied with all the wine he wanted, receiving it from New York or Boston or other cities by express all the time. The rich man can take care and see that he gets a good article, but the poor man is the sufferer, and gets the rot gut. The same gentleman told me that he could count more drunken men in a day in Portland passing before the banking house in which he was engaged than before the enforcement of these laws. I heard exactly the same thing in Iowa and Kansas. The evil effect on the country and the demoralizing effect on the people is undeniable.

There is, however, another class of local option laws that are being passed in some places lately, recently in Georgia and Vermont. The way they succeeded in passing these laws is to excite religious impulse, the same as our darkey friends in the churches. They are trying to get the law through in Washington, and the gentleman who was at the head of the movement, said that the way they would go to work was to organize in the churches, a society and excite the sympathies of the weak members and the commoner classes of the people. The effect of this, is a thing that we ought to consider from our own standpoint and and not from the public's standpoint Wine is not a drink to be drank in a hurry like beer or whiskey? It is a drink to be used leisurely and at the table. This last movement if successful, would practicatly cut off the wine business. Only a few rich people who could afford to have it in quantities, and keep it in their own cellar would be using it. It would be practically cut off from the table. It is too bulky an article to be hidden, and is something to be purchased in quantity and not by the glass in a hasty manner. You cannot be taken up into a third story bed-room in a hotel, as you can in Portland, Me., when you want a drink of whiskey, for the purpose of drinking wine. We are hurt more than any other class, for the practical result of prohibition is to prevent the use of harmless drinks, and really beneficial ones, and force to the use of the worst classes of drinks, and really it demoralizes the whole community. We have a personal interest as well as that which is connected with our business. We have the interest connected with our rights as citizens, and we have the interest connected with our principles of Government, and in respect to law and good order. We want you to think about this, and take some action and work, and we cannot work by resolution or by speeches. We have to have a main organization and keep branches supplied with the material necessary to make the fight. Otherwise our ground will be cut from under us. It will take a little time for the prohibitionists to take the South. I am firmly convinced that very little crusading will break them all up. When I was in Washington I felt so convinced, that I believed any man understanding the subject, and feeling jealous in his rights could have gone there and made a great inroad in their work. I wanted to go down and see what I could do myself, but I could not get away. But nobody is following it up. They are progressing and doing us harm, and as I said before, the country is falling into the hands of cranks, for the simple reason men will not contend for their rights. To this end, the meetings to-morrow are of the more importance. We want unity, harmony and good felloswhip among ourselves. We want effective, energetic work done by men who can be trusted. We have power enough in this State to do a great deal. More in this State than in any State of the Union, considering its population, for there is so large a proportion of us who were not born here, and have connections and friends in the Eastern States whom we can call upon for assistance in support of the bill. I suppose I am now addressing not less than fifty persons, each one of whom has some friends in the Eastern States who could bring some influence to bear on his member of Congress in convincing him that it is proper to vote for this bill. What we want is for every wine grower throughout the State, and every one who hopes that it will succed to constitute himself a committee of one on the measure before Congress and urge the passage of the bill without compromise, no cavilling about words. If it gets battered a little in the House, get it through. Get it through anyhow, and have it fixed in the Senate. If it does not go satisfactory, get it through and fix it up afterwards. But you want there men who have influence, so as to get right to the friends in Congress when we want them, to look after its interest and get the help of these people. Write to your friends in the East and tell them to urge their Congressmen to vote for "Colonel Green's Bill on Spurious Wines." That will be sufficient to identify the bill, and if the help is ever so little, it will be something in the great amount of work that we have to do.

Mr. Palmtag.—They are already getting in in Santa Cruz County in this matter of Local Option. They have gotten up a petition for the calling of an election. They called on me as one of the supervisors and chairman of the board to call an election. I told them that we had no right to call any election for that purpose. Out of the 1400 voters they have 800, which is a majority, so they are going to present the petition before the board. As Chairman, I told them they could not act upon it, and the other members have the same opinion as I have.

But the people are indifferent, and do not take sufficient interest. Many of the signers to the petition are men who don't work, some I have not seen doing any work since 1872. They had a temperance man there, a temperance lecturer from Iowa, and it was proven that the man was drunk twice in the town. They are now starting in Santa Cruz County, and we have to start in to check them. They insult all the foreign nations, and say they are nothing but liquor drinkers and wine drinkers. They have drawn up a bill to forbid wine making or beer making. Three years ago I travelled through Europe, and I asked my brother why there were so many breweries there now. He said it was because they had no wines there, and had not had for about five years, and they had to have something to keep them from liquor, so the Government built breweries. On my travels in Germany, France and Switzerland I have not seen a drunken man. Have seen them go to the beer gardens with their families and there enjoy their beer. In Liverpool I have seen drunkenness, and there was a great deal of liquor drank, but where I have seen beer and wine used, there I have not seen any drunkenness. I could not go out in our County and contend against these prohibitionists myself, for I am not much of a speaker, and besides that, they say it is a disgrace to the County that a wine maker should have been elected to the Board of Supervisors.

Mr. Combe.—We had occasion to discuss this matter in Santa Clara County within the last two weeks. In the room were some that were prohibitionists and some that were not, and the greatest trouble we have is to separate the two classes. I had fortunately a great deal of influence on the assembly, as I could testify to the habits and results of wine drinking in Europe. They asked me to give my experience. I found the trouble is this, that they associate the drinking of wine with the drinking of liquors, and look upon wine as an intoxicating liquor, and they drift into that opinion and style us all as villainous drinkers. We should urge upon our friends, and use our own efforts to show them that wine drinking is an entirely different thing from liquor drinking. The more we get in the habit of drinking pure wine, the less any other liquor, even pure liquor, will be consumed in the country. Only in that way will we secure the approval of many men who now think there is no difference between the two classes. I received an acknowledgement from the President of the Prohibition Society in Santa Clara County. He acknowledged that my views were correct, but that they could not make two issues out of the matter ; that they must lump it all together, everything intoxicating. But he acknowledged that if we could persuade the people to be moderate in the use of wine he could not see why they could not be temperate. The argument we can use with them is this, that they cannot get prohibition now, and if they want to get true temperance, they must encourage the wine makers, and especially the practice of drinking wine moderately in the house and prevent the going out and tippling.

The President.—Had these people, who are so eager for prohibition, been here during this week and seen the attendance and the earnest interest that was shown in the trial of wines, and then the almost indifference that was manifested when the brandies were brought forward for testing, they would have been taught a useful lesson. The wine-makers have no appetite for liquors. As soon as the brandies came forward everybody left.

Dr. George Bernard.—I have very little to say on prohibition, still we can do a a great deal individually to teach the people that they should drink wine, and if any of you gentlemen come to Livermore, you can go to one of the hotels and call for a glass of wine, a cup of coffee or tea, and they won't make any difference in the charge. There is no extra charge for the wine. They give you a good glass of ordinary claret, and I notice a great many drink it. I went into one of the hotels last week and inquired how much they used, and they said they used about fifteen gallons a week. The boarders use a good deal of claret. As I have said previously, we can do a great deal individually to teach people to drink wine, and what little I can possibly do, I try to do. I tell the people the difference between good, wholesome wine and poor wine. Of course, there are a great many people whom you cannot force to drink wine. They say it is sour and do not like it. That is allright; they are not forced to drink it, but there are a great many people whom you can convince that a glass of good, wholesome wine is beneficial to drink. It is better than whiskey. There is considerable wine drank in our district. We make our wine and lack no market for it. I was perfectly astonished last week when my partner told me he had already sold over 200 gallons of wine It is wholesome wine, and I have no doubt that the people will learn to drink wine and less whiskey. However, the work is slow.

Mr. Wetmore.—Do all the hotels in Livermore give wine on the table?

Dr. Bernard.—Two hotels, the Washington and Morning Star, and we expect the other will follow.

Mr. Wetmore.—I am glad to hear that. In Napa, where they raise more wine than anywhere else in the country, you cannot get a glass of wine unless you pay a fancy price.

Dr. Bernard.—They found out it was just as profitable to give wine as tea or coffee. I have not the slightest doubt that the other hotel will soon follow.

The President.—We will now listen to a few remarks by Capt. C. de St. Hubert.

Capt. C. de St. Hubert.—Mr. President, Ladies and Gentlemen: I do not know what I can say after what has been said, but I can show that the use of wine in Algiers and France are the causes that prevent drunkenness. In 1864, when I was there, they had wine pure, but not very good. It was delivered free to the soldiers. Previous to that a great many deaths had occurred from delerium tremens caused by drinking spirits and absinthe in large quantities. Since that, it is almost unknown in the army. In France there is a society to prevent drunkenness in the low quarters on account of the bad wines distributed there and drank for two sous over the counter. Lately in France, I suppose, they have been obliged to come to it to provide for the demand of that class of people. The wine being found bad by them, of course they returned to the spirits and now there are a large number of drinking people in the cities. The Government now is taking steps to prevent it. The result will be that they must get wine or they will do the same as they do in London, where they drink large quantities of whisky and gin, but no wine. Lately, in San Jose, I could not find a restaurant where wine was not given at the meal without extra charge. Six years ago I could not find a restaurant in the same place where I could get a bottle of wine. The wine is not always as good as it ought to be, but certainly it was pure wine. That is a great result. I have just learned that on account of these low freights, a good deal of bad wine has gone East. Wine that could not be sold here at all has gone there. What will be the result of that? It is easy to see that somebody will buy it over there, and sell it as pure wine. It may be pure, but it is bad. The sending of such wines by our vine-growers is a bad practice. It ought to have been turned over to the distillers. Even with the new law, it is admitted that though the wine is poor, still if it is pure it can be sold, but what will be the result of pursuing such a course, it will simply prevent the man from selling good wine at a price that he would like to get for it. To-day I have been testing samples of wine that a man has sent to a place he knows where he ought not to send anything but very good wine.

Mr. E. C. Priber.—I have here some resolutions which the majority of the Convention has requested me to present. They are as follows:

Whereas, Mr. Chas. A. Wetmore and Mr. Pohndorff have, during their recent sojourn East, particularly in Washington and New York, done immense service to the interest of California Viticulturists and the entire State, the benefit of which is already experienced and will be more fully appreciated at a later period;

Whereas, Mr. Wetmore succeeded by his personal eloquence and persistence to fill with enthusiasm for our cause our Eastern representative men, and to raise the American wine interest to a national question, and thereby pave the way to enable us to protect our interest by proper future legislation;

Therefore, be it resolved that this Convention tenders its most sincere thanks to Mr. Chas. A. Wetmore and Mr. F. Pohndorff in acknowledgment and appreciation of the services rendered.

I move the adoption of these resolutions.

Mr. L. D. Combe.—I second the resolution, with the remarks that we heartily appreciate the work done, in every sense of the word.

The President.—Gentlemen:—It is a matter of great pleasure to me to submit these resolutions for your approval. I won't preface them by adding any words of mine. You are all aware, as you come in contact with these gentlemen, the great value of their services. I am happy to be here this evening to submit these resolutions.

Dr. Bernard.—I make an amendment that the thanks include also the members of the Viticultural Commission.

Seconded by Mr. Landsberger.

The President.—The Commission feel gratified, but they know where the credit is due.

Mr. Landsberger.—Though in full sympathy with the resolution, I do not forget the fact that the Commission have allowed Mr. Wetmore and Mr. Pohndorff to become our servants for a time. Certainly the Commission are deserving of thanks for that, and sending these gentlemen East. I therefore think that they would be properly included in the resolution.

The amendment was carried, when the original resolution, as amended was put and carried.

Mr. Pohndorff.—I want to protest that I should not be put in line with Mr. Wetmore. I was simply his aid. He has worked, and how he has worked I cannot tell. Your thanks are due to him and not to me.

Mr. Wetmore.—This seems to be getting into a kind of love feast. I want to say that Mr. Pohndorff did the work, and I did a great deal of the fancy part. He got up about two hours earlier and went to bed later, and when we were bottling wine, he had to have hot water by his side for him to put his hands into to keep them warm.

Mr. Landsberger.—While we have all signified our appreciation of the services rendered to our common interest by the entire committee, I think we should not stop right there, but I think we should express it as our intention, as we are assembled in Convention, not only to approve of the steps taken by our Commission, but that we pledge ourselves, for ourselves personally, as well as those whom we employ or whom we know to be interested that will stand with the Commission, and aid them to the utmost of our ability, and with monetary support to help them in carrying out the

work that they have commenced. It is impossible to carry out such work without substantial aid, more than that appropriated by the State, and the necessary means must be provided to allow our Commission to satisfactorily continue the work they have commenced, and we will aid them as far as we can.

The President.—In that connection, I would say that every word spoken by Mr. Landsberger has great weight, and is of great value, and it should not be lost on those who hear it, and they should seek also to impress it on their neighbors who are engaged in the advancement of the same enterprize. It means extensions of land, increase in the price of land, receipts and incomes for your wives and children, more enterprise and general prosperity. On the other hand, and under other circumstances, it would mean the contrary. We have now an opportunity such as we have never had before, but we have to pay for it, not to make anybody wealthy, but you have to pay for stationery, postage stamps and many little things that have got to be done. You have to make a show of your products. You might go up before the committees of the House of Congress or to the people in the East, and talk as long as you please about pure wines, but they will say where is this pure wine. We have never tasted it. Have you got it? It ought to be there and in such quantities as to give a general idea of this wine.

The Commission is doing its utmost to keep within the limits of the law, but still there is something lacking, and I wish to impress upon each and all of you that it is necessary to do something material in the advancement of this cause. You never have had such a chance and you probably will never have such another opportunity. This matter ought to be worked up. We ought to have a representative at this National Convention; a representative not only in words and documents, but provided with wines. Thus far the work has been done well. The jealousies between our own State and those Eastern States where they make wine by different plans has been mollified and smoothed over. We are trying to interest the consumer to an extent beyond what we have ever done. In doing this we are only protecting our own interests. In this work, Mr. Wetmore has returned to babyhood even. He has mixed the milk and the wine together. Now, I wish to enlist your cordial sympathy and material aid in this work. To-morrow, our morning will be occupied with the sampling of wines, and then we will finish all the sampling we have to do. At half past one the State Vinicultural Society will meet and take charge of the discussions of the markets of the world for our wines, and other pertinent facts.

The Convention then adjourned until the following morning at 10 o'clock.

SIXTH DAY.

AFTEROOON SESSION.

MEETING OF THE STATE VINICULTURAL LOCITY.

San Francisco, March 20, 1886.

The President.—The work of the Convention ceased this morning with the tasting of the wine. You are now at a meeting of the State Vinicultural Society, the Commission having tendered this hall for the afternoon and evening to that society for the purpose of giving new life to it. To give the society also an opportunity to express its voice upon matters which the Commission may have already passed upon, but which may lead to a better understanding among the wine-growers of the State of what is to their interest.

As this forms no part of the proceedings of the Fourth Annual Viticultural Convention, it is consequently not included in this report.

VINTAGE OF 1885.

Report on Experiments Performed in the Experimental Cellar of the State Viticultural Commission, under the Direction of Chas. A. Wetmore, Chief Executive Viticultural Officer.

To determine the effect of compressed yeast used in fermentation :

No. 1.—One quart of Catawba condensed must reduced to 23 per cent. sugar put in glass jar to ferment; no yeast used ; temperature of room during fermentation, 67 to 70 degrees ; must put in glass jar July 8th ; fermentation finished July 22d ; time of fermentation, 14 days.

No. 2.—Same amount of condensed must as in No. 1 ; a very small quantity of compressed yeast added ; time of fermentation, 10 days.

No. 3.—Same amount of condensed must; ¼ oz. of yeast added ; time of fermentation, 10 days.

After the above wines had settled no yeast smell could be detected in No. 2 or No. 3.

Nos. 4 and 5.—To determine what would become of arsenic, if any, on the grapes. Crushed some Black Hamburg grapes, and in No. 4 added 7 grains arsenic before fermentation started ; in No. 5 added 2 grains arsenic ; after fermentation was completed the wine was sent to the State Analyst for analysis.

No. 6.—To determine the effects of compressed yeast in the fermentation of fresh grapes. 75 lbs. Early Black July grapes were stemmed and crushed and placed in tub to ferment ; added 1 oz. compressed yeast ; during fermentation lowest temperature of room, 62 degrees ; highest 67 degrees ; lowest temperature of must, 65 de-

grees ; highest, 76 degrees ; time of fermentation, 5 days.

No. 7.—Stemmed and crushed the same amount of grapes as in No. 6, and added a very small amount of compressed yeast ; lowest and highest temperatures of room during fermentation, 62 and 67 degrees ; of must, 65 and 73 degrees ; time of fermentation, 7 days.

No. 8.—Same as No. 6, but no yeast added ; temperature of room, 52 to 67 degrees ; of must, 64 to 76 degrees ; time of fermentation, 8 days.

No. 9.—Same amount grapes as above lot but not crushed ; no yeast added ; temperature of room, 62 to 67 degrees ; of must, 65 to 75 degrees ; time of fermentation, 10 days.

No. 10.—Same amount grapes stemmed and crushed ; added Plaster Paris at the rate of 5 lbs. to the ton ; no yeast used ; temperature of room, 62 to 67 degrees ; of must, 64 to 77 degrees ; time of fermentation, 8 days.

No. 11.—Crushed and pressed 50 lbs. same grapes for white wine ; no yeast used; placed juice in demijohn ; after it had remained 24 hours drew off and threw the settlings away and then poured the juice back into the demijohn and left it to ferment. Time of fermentation, 12 days.

No. 12.—Stemmed and crushed 23 pounds of Chauché Noir from Livermore; 25 per cent sugar Balling ; added small amount compressed yeast ; temperature of room 60 to 64 degrees ; of must 62 to 67 degrees ; time of fermentation, 8 days.

No. 13.—Stemmed and crushed same amount of grapes as in No. 12, and pressed them immediately and placed juice in barrel to settle; put the pressed skins in a tub and poured water on them, leaving them there for 24 hours; then pressed again and threw the water away ; drew the juice off the settlings and added it to the skins and left to ferment; small amount yeast added; time of fermentation 6 days.

No. 14.—Same amount of grapes were stemmed, crushed and pressed ; skins put in tub and covered with water containing small amount sulphuric acid; after 24 hours skins pressed again and placed in tub with the juice to ferment ; small amount yeast added; time of fermentation 6 days. The water that was pressed from the skins showed considerable color and the wine after fermentation did not have as much color as No. 12.

No. 15.—Stemmed and crushed 100 lbs. Petit Pinot from Livermore ; 24 per cent sugar; added small amount yeast ; temperature of room during fermentation 60 to 63 degrees; of must 63 to 72 degrees ; time of fermentation 6 days.

No. 16.—Same amount of above grapes stemmed and crushed and immediately pressed and the juice left to settle for 24 hours ; juice then drawn off the settlings and placed on the skins to ferment; a little compressed yeast added ; temperature of room during fermentation 60 to 63 degrees; of must 65 to 72 degrees; time of fermentation 6 days.

No. 17.—Stemmed and crushed, 360 lbs. of Tannat, from Livermore, 21½ per cent sugar ; divided the must into four vats and added a little yeast to each ; to (a), added 6 grammes of Oenotannin ; to (b), 4 oz. Plaster Paris ; to (c), 4 oz. Tartrate of Potash ; to (d), 10 grammes Sulphuric acid; (a) finished fermentation in 4 days ; (b), (c) and (d) finished fermentation in 6 days; temperature of the room, 62 to 64 degrees ; temperature of musts, (highest), 75 degrees.

No. 18.—Stemmed crushed and pressed, 53 lbs. Klevner, and 12 lbs. Plant vert Doré, from Livermore, 26 per cent sugar ; the grapes arrived a little mouldy, so heated the juice up to 130 degrees for five minutes; after 24 hours, drew the juice off the settlings ; added a little yeast ; temperature of the room, 62 to 65 degrees ; highest temperature of must, 72 degrees ; time of fermentation 12 days.

No. 19.—Stemmed and crushed 13 lbs. Alicante Bouschet and 12 lbs. Petit Bouschet ; 21 per cent. sugar ; added a little yeast from No. 17, also 1 oz. plaster Paris ; temperature of room, 64 to 66 degrees ; highest temperature must, 69 degrees ; time of fermentation, 6 days.

No. 20.—Stemmed and crushed 80 lbs. Mataros from Livermore ; 26 per cent. sugar ; added yeast from No. 18, also 3 oz. plaster Paris ; temperature of room, 64 to 70 degrees ; highest temperature must, 73 degrees ; time of fermentation, 6 days.

No. 21.—Stemmed and crushed 80 lbs. same grapes ; added yeast of No. 18 ; no plaster used ; highest temperature must, 73 degrees ; time of fermentation, 5 days.

No. 22.—Crushed and pressed 117 lbs. White Pinot and 20 lbs. Klevner from Livermore ; 24 per cent. sugar ; let juice settle for 26 hours and then drew off from the settlings ; skimmed the top yeast off as it rose; time of fermentation, 7 days ; highest temperature must, 69 degrees.

No. 23.—Crushed and pressed 40 lbs. Semillon and 14 lbs. Sauvignon blanc from Livermore ; 26 per cent. sugar ; let the juice settle for 24 hours and then drew off ; allowed the top yeast to run over the top of the demijohn ; when must showed 2 per cent. sugar, drew off two bottles and heated them to 140 degrees so as to keep them sweet ; the balance left to ferment dry finishing in 11 days from time of pressing ; one month afterwards racked the two bottles, left sweet, into a glass jar in which a sulphur match had been burned ; then poured the wine back into the bottles and corked up tightly.

No. 24.—Stemmed and crushed 92 lbs. Petit Syrah from Livermore, 25 per cent. sugar, and 11 lbs. White Prolific, 23½ per cent. sugar ; added a little yeast of No. 23 ;

temperature room, 64 to 70 degrees; of must, 68 to 78 degrees; time of fermentation, 6 days.

No. 25.—Took the top yeast that I had skimmed off of No. 22 and placed in water to settle; drew off the water and obtained 2 oz. yeast from 8 gallons wine.

No. 25 (a).—Saved the bottom yeast of No. 22 and obtained 12 oz. from 8 gallons.

No. 26.—Stemmed and crushed 97 lbs. Tannat from Livermore; 23 per cent sugar; added a little yeast of No. 24; temperatnre of room 62 to 68 degrees; of must 64 to 72 degrees; time of fermentation 7 days.

No. 27—Stemmed and crushed 15 lbs. Lenoir from Livermore; 30 per cent sugar; reduced the must to 26½ per cent; added a little compressed yeast; time of fermentation 8 days.

No. 28.—Same as No. 27.

No. 29.—Stemmed and crushed 72 lbs. Mataro from Livermore; 24 per cent sugar; added a little yeast of No. 26; temperature of room 62 to 66 degrees; of must 65 to 73 degrees; time of fermentation 5 days.

No. 30.—To produce a yeast. Took 3 gallons water, 3 lbs. wheat bran and 1½ lbs. sugar; heated mixture to 75 degrees and added a little compressed yeast. The next day a good fermentation had started in.

No. 31.—Took same quantity of water and sugar and 3 lbs. flour; added a little compressed yeast. The next day no sign of a fermentation; after two days a slight fermentation was perceptible.

No. 32.—Same quantity of water and sugar and 3 lbs. rye bran treated in same way; a good fermentation obtained.

No. 33.—Stemmed and crushed 37 lbs. Cinsaut from Livermore; 21 per cent sugar; temperature of room 62 to 67 degrees; of must 65 to 68 degrees; time of fermentation 4 days.

No. 34.—Stemmed and crushed 33 lbs. Aramon from Livermore; 20 per cent sugar; grapes received in bad condition; acetic smell quite plain after fermenting for two days; added ¾ oz. prepared chalk to the fermenting must and ½ oz. bi-tartrate of potash. The next day still an acetic smell; added ¾ oz. more chalk. The next day very little acetic smell; temperature of room 61 to 67 degrees; of must 63 to 68 degrees; time of fermentation 7 days.

No. 35.—Stemmed and crushed 72 lbs. Carignan from J. G. Heald, Cloverdale; 22 per cent sugar; added 2 oz. plaster and a little compressed yeast; temperature of room 60 to 67 degrees; temperature of must 62 to 69 degrees; time of fermentation 8 days.

No. 36.—Stemmed and crushed 66 lbs. 2nd crop Zinfandel grapes from Cloverdale 22 per cent. sugar; added 2 oz. plaster Paris; temperature of room, 60 to 70 degrees; temperature of must, 62 to 67 degrees; time of fermentation, 10 days.

No. 37.—Stemmed and crushed 87 lbs. 2nd crop Mataros from Livermore, 23 per cent. sugar; added one gallon of yeast made from No. 32 [rye bran] and 2 oz. bi-tartrate potash and 2½ oz. plaster; fermentation started in within one hour after mixture; temperature of room, 62 to 67 degrees; temperature of must, 66 to 78 degrees; time of fermentation, 3 days.

No. 38.—Stemmed and crushed 87 lbs. 2nd crop Matros from Livermore, 23 per cent. sugar; added one gallon of wheat bran yeast of No. 30, also 2 oz. bi-tartrate of potash and 2½ oz. plaster; temperature of room, 62 to 67 degrees; temperature of must 67 to 76 degrees; time of fermentation, 3 days.

No. 39.—Stemmed and crushed 108 lbs. 2nd crop Mataros from Livermore, 23 per cent. sugar; added ¼ of the stems and 2½ oz. plaster; temperature of room, 60 to 67 degrees; temperature of must, 62 to 72 degrees; time of fermentation, 9 days.

No. 40.—Stemmed and crushed 14 lbs. Mondeuse from grafts, Livermore, 23 per cent. sugar; temperature of room, 60 to 67 degrees; temperature of must, 61 to 66 degrees; time of fermentation, 9 days.

No. 41.—Stemmed and crushed 4 lbs. Verdot and 9 lbs. Cab Franc, 24 per cent. sugar; time of fermentation, 9 days.

No. 42.—Stemmed and crushed 12 lbs. Mission from Stockton, 25 per cent. sugar; put in glass jar to ferment; added 1½ grammes of tannic acid; after fermenting for 13 days showed 6 per cent. sugar; added 2 grammes bi-tartrate potash and 2 grammes tartaric acid; in 6 days more fermentation finished and wine perfectly sound; temperature of room, 63 to 67 degrees; temperature of must, 64 to 67 degrees; time of fermentation, 19 days.

No. 43.—Stemmed and crushed 12 lbs. Mission from Stockton; 25 per cent. sugar; put in glass jar to ferment, but added no tannic acid; wine went to vinegar before fermentation finished.

No. 44.—Stemmed and crushed 60 lbs. 3d crop Zinfandel from Cordelia; 21 per cent. sugar; added 8 grammes tannic acid; 16 grammes tartaric acid and 16 grammes bi-tartrate potash; temperature of room 61 to 65 degrees; temperature of must 62 to 68 degrees; time of fermentation 8 days.

No. 45.—Stemmed and crushed 60 lbs. 3d crop Zinfandel as in No. 44; added ½ oz. tannic acid; temperature of room 61 to 65 degrees; temperature of must, 62 to 68 degrees; time of fermentation 8 days.

No. 46.—To same amount of above grapes, nothing added; temperature of room, 61 to 65 degrees; temperature of must, 62 to 68 degrees.

No. 46.—To same amount of above grapes, nothing added; temperature of room, 61 to 65 degrees: temperature of must, 63 to 68 degrees; time of fermentation, 8 days.

No. 47.—(a) (b) (c)—Stemmed and crushed 48 lbs. 3d crop Zinfandel as above; divided into three equal parts and placed in glass jars to ferment; in (a) put 2

grammes tannic acid: (b) 2 grammes tannic acid; 4 of tartaric acid and 4 of bi-tartrate potash; (c) nothing added; (a) and (b) finished fermentation one day sooner than (c).

No. 48.—Stemmed and crushed 117 lbs. Tannat from Geo. West, Stockton; 23 per cent. sugar: added a little compressed yeast; temperature of room, 59 to 66 degrees; temperature of must, 59 to 71 degrees; time of fermentation, 12 days.

No. 49.—Stemmed and crushed 58 lbs. Mondeause from Stockton; 19 per cent. sugar; added a little compressed yeast; temperature of room, 59 to 66 degrees; temperature of must, 59 to 70 degrees; time of fermentation, 10 days.

No. 50.—Stemmed and crushed 28 lbs. Cabernet Sauvignon and 28 lbs. Cabernet Franc from Stockton; 21 per cent. sugar; added a little compressed yeast; temperature of room, 59 to 66 degrees; temperature of must, 60 to 70 degrees; time of fermentation, 12 days.

No. 51.—Stemmed and crushed 20 lbs. Verdot from Stockton; 23 per cent sugar; added a little compressed yeast; temperature of room 59 to 66 degrees; temperature of must 58 to 68 degrees.

No. 52.—Stemmed, crushed and pressed 16 lbs. Boal from Stockton; 22 per cent sugar; time of fermentation 10 days.

No. 53.—Condensed musts. Took six gallons of condensed Zinfandel must reduced to 24 per cent sugar; added 2 pounds of dried Zinfandel skins to each gallon of must; after standing for four hours the must showed 26 per cent; reduced by adding water to 24 per cent; two hours later must read 25½ per cent; reduced again to 24 per cent; added some compressed yeast; temperature of room 60 to 64 degrees; temperature of must 60 to 69 degrees; time of fermentation 10 days.

No. 54.—Six gallons condensed Zinfandel must reduced with water to 23 per cent; added 14 lbs. of Zinfandel dried skins and 4 lbs. of Crabb's Black Burgundy skins. In five hours time must read 25 per cent; reduced by water to 23 per cent; the next morning must read 27½ per cent; reduced to 23 per cent; added some compressed yeast; temperature of room 59 to 62 degrees; temperature of must 59 to 65 degrees; time of fermentation 11 days.

No. 55.—For Port wine. Six gallons condensed Zinfandel must reduced to thirty-two per cent; added eighteen lbs. dried Black Burgundy skins and some compressed yeast. When must read 5 per cent pressed and added 5 per cent spirit; ten days afterward a slight fermentation going on; added 3 per cent more spirit, and fermentation checked.

No. 56.—One gallon of Mission condensed must reduced to 24 per cent. and placed in glass jars to ferment; added 3 lbs. dried Black Burgundy skins and some yeast, temperature of room, 59 to 62 degrees; temperature of must, 58 to 63 degrees; time of fermentation, 14 days.

No. 57.—Took one gallon of No, 55 when fermentated to 5 per cent and added more condensed must raising to 7½ per cent; four days afterwards must read 3 per cent; raised again by adding fresh must to 6 per cent; 7 days afterwards fermentation stopped and must read 3 per cent.

No. 58.—Condensed musts for white wine. Reduced Golden Chasselas must to 26 per cent., and added a little yeast and tannin; placed demijohn in room where the temperature was kept between 71 and 73 degrees; after remaining 19 days must showed 2½ per cent. sugar and fermentation stopped; would not ferment dry.

No. 59.—Reduced Mission must to 26 per cent., and added yeast and tannin; put in room heated to 72 degrees; fermentation stopped at 3 per cent.

No. 60.—Reduced Feher Szagos must to 25 per cent; added yeast and tannin; placed in warm room; fermentation stopped at 1½ per cent.

Nos. 61-62.—Duplicates of Nos. 58 and 59 but left in room temperature running from 59 to 62 degrees: Chasselas must fermented to ½ per cent. sugar, and Mission to 2 per cent.

SHERRY SAMPLES PLACED IN HOT ROOM.

No. 1.—Placed one gallon of Semillon (85), from H. W. Crabb, fortified 3 per cent. with Burger brandy, in room where temperature was kept from 100 to 110 degrees.

No. 2.—Same time placed 1½ gallons Verdelho,[85,] containing 5 per cent. sugar, from Bugby vineyard, fortified 3 per cent. with Burger brandy.

Fo. 3.—Same time 1½ gallons Golden Chasselas, [85,] from H. W. Crabb, fortified with Mission brandy 3 per cent.

No. 4.—Same time; 1½ gals. Golden Chasselas, plastered 1885 from H. W. Crabb; fortified 3 per cent.

No. 5.—Same time; 4 gals. Sauvignon Vert, 1883, from H. W. Crabb; not fortified.

No. 6.—January 3rd; 1 gal. Trousseau Port, 1884, from C. A. Wetmore.

No. 7.—January 3rd; 1 gal. Trousseau dry, 1884, from C. A. Wetmore; fortified 3 per cent.

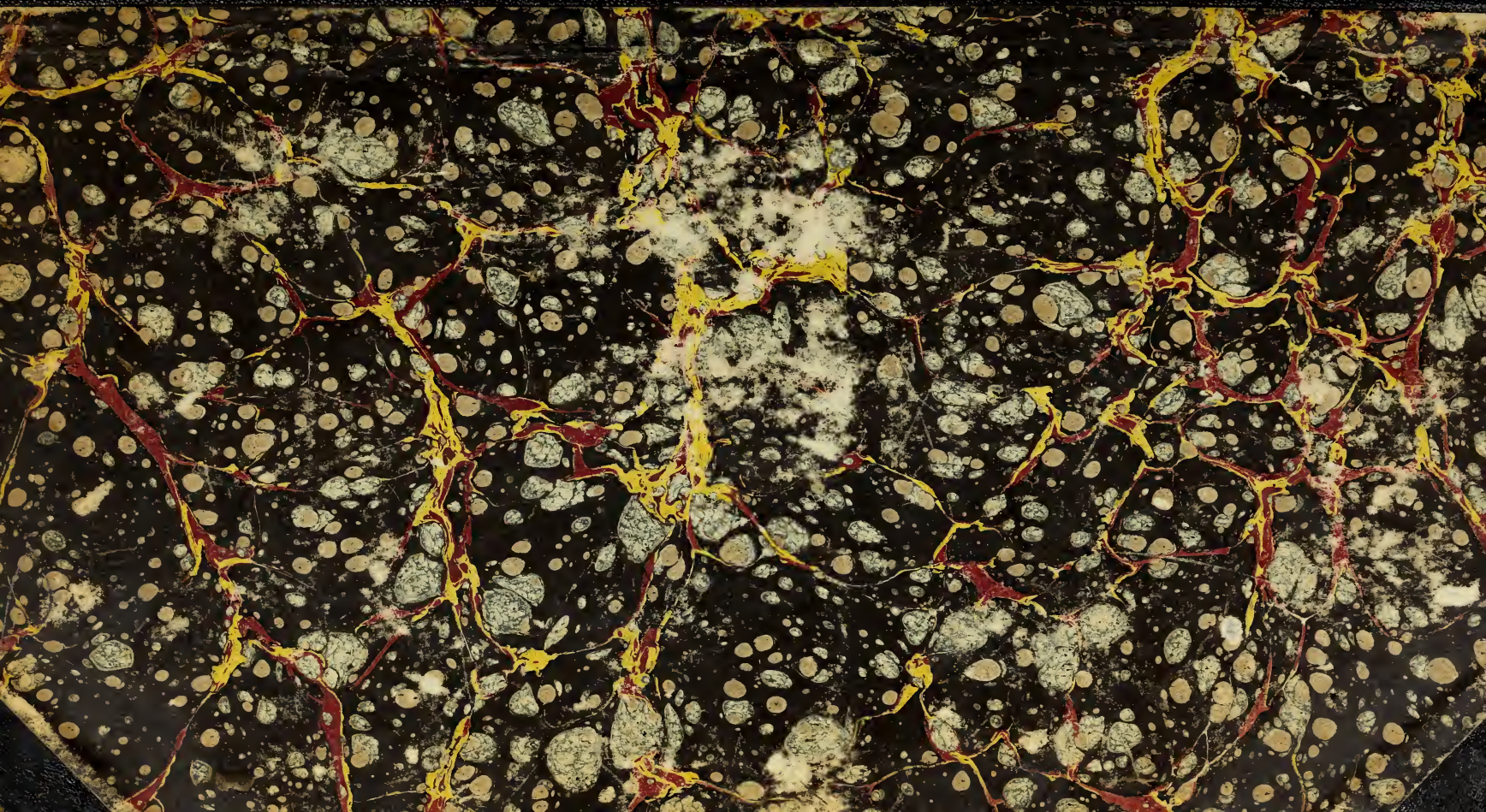
No. 8.—January 3rd; 1 gal. Trousseau (Maderia), 1884, from C. A. Wetmore; fortified 3 per cent.

No. 9.—January 3rd; 1 gal Sherry, 1882, from C. A. Wetmore.

No. 10.—January 3rd; 3 gal. barrel of Pinot, from C. A. Wetmore; not fortified.

No. 11.—January 3rd; 1 gal white Grenache, 1885, from H. G. Wagoner, Livermore; fortified 3 per cent.

No. 12.—January 14th; 1½ gals. Golden Chasselas plastered 1885, from F. L. Fowler, Livemore; fortified 3 per cent.

$$C_2H_4O_2 + Cu(OH)_2 = Cu(C_2H_3O_2) + H_2O$$

$$Cu(C_2H_3O_2) - K + T = K(C_2H_3O_2) + Cu$$